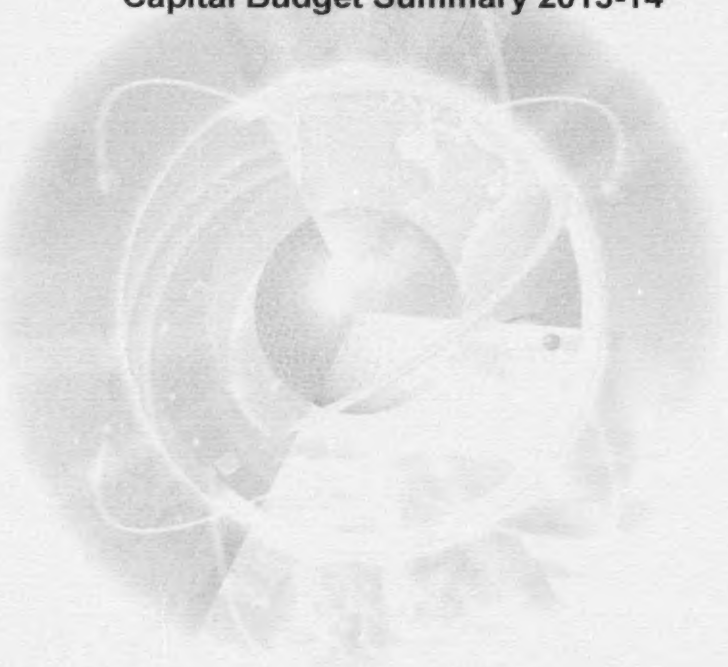
Corporate Plan Summary
2013-2014 to 2017-2018

Operating Budget Summary 2013-14
Capital Budget Summary 2013-14



Atomic Energy of Canada Limited

This page intentionally left blank

TABLE OF CONTENTS

1		EXECUTIVE SUMMARY	1
	1.1	Introduction	1
	1.2	AECL Governance and Management Oversight	3
	1.3	Planning Environment	3
	1.4	Strategic Direction	4
	1.5	Financial Summary	5
2		MANDATE	9
	2.1	Nuclear Laboratories	9
	2.2	Wrap-Up Office	9
3		CORPORATE PROFILE	10
	3.1	Introduction	10
	3.1.1	Nuclear Laboratories	10
	3.1.2	Wrap-Up Office	12
	3.2	History	12
	3.3	AECL's Program Activity Architecture	13
	3.4	Corporate Governance	16
	3.4.1	Board of Directors	16
	3.4.2	Executive Team	17
	3.4.3	Governance Framework	18
	3.4.4	Business Planning Cycle	20
4		STRATEGIC CONSIDERATIONS FOR THE PLANNING PERIOD	22
	4.1	Restructuring of AECL	22
	4.2	Situational Risks	24
5		Strategic Direction	29
	5.1	CEO Direction	29
	5.2	Science and Technology Priorities	30
	5.3	Management Area Expectations	31
	5.3.1	Improvement Management – Focus on Strategic Improvements	32
	5.3.2	Capability Management – Centres of Excellence	34
6		PROGRAM ACTIVITIES	36
	6.1	Program Activity 1.1: Nuclear Industry Capability	38
	6.2	Program Activity 1.2: Nuclear Safety and Security	42
	6.3	Program Activity 1.3: Clean, Safe Energy	45
	6.4	Program Activity 1.4: Health, Isotopes and Radiation	49
	6.5	Program Activity 1.5: Nuclear Environmental Stewardship	52
	6.6	Program Activity 1.6: Nuclear Innovation Networks	56
	6.7	Program Activity 1.7: Mission-Ready Science and Technology Infrastructure	59
	6.8	Program Activity 1.8: Internal Services	62
7		FINANCIAL STATEMENTS	66
	7.1	Financial Overview	66
	7.2	Key Financial Assumptions	67
	7.3	Financial Summary by Program Activity	68
	7.4	Third-Party Revenues	69

7.5 Government Funding 70
7.6 2013-14 Operating Budget 73
7.7 2013-14 Capital Budget 73

LIST OF TABLES

Table 1: AECL Financial Summary 6
Table 2: Nuclear Laboratories Program Activity Architecture 15
Table 3: AECL S&T Priorities 30
Table 4: AECL Centres of Excellence 34
Table 5: Program Activity 1.1 Financial Projection 41
Table 6: Program Activity 1.2 Financial Projection 44
Table 7: Program Activity 1.3 Financial Projection 48
Table 8: Program Activity 1.4 Financial Projection 51
Table 9: Program Activity 1.5 Financial Projection 55
Table 10: Program Activity 1.6 Financial Projection 58
Table 11: Program Activity 1.7 Financial Projection 61
Table 12: Program Activity 1.8 Financial Projection 65
Table 13: Program Activity Financial Summary 68
Table 14: Government Funding 72

LIST OF FIGURES

Figure 1: AECL Board Structure 16
Figure 2: Organization Chart 18
Figure 3: AECL Management System Framework 19

LIST OF APPENDICES

APPENDIX 1: 2013-2014 CONSOLIDATED FINANCIAL STATEMENTS 74
APPENDIX 2: NUCLEAR LEGACY LIABILITY PROGRAM (NLLP) 77
APPENDIX 3: 2013-2014 OPERATING BUDGET 78
APPENDIX 4: WRAP-UP OFFICE 82
APPENDIX 5: AECL BOARD OF DIRECTORS 83
APPENDIX 6: ACRONYMS 87

1 EXECUTIVE SUMMARY

1.1 Introduction

This is a summary of the Corporate Plan that was approved by the Board of Directors on March 19, 2013. Some detailed financial tables have not been included in this Summary due to commercial sensitivities. Consolidated financial tables are shown within Section 7: Financial Statements. Similarly, expenditures will be required in future years for the Wrap-Up Office but are not included in this Summary due to commercial sensitivities.

Atomic Energy of Canada Limited (AECL) is Canada's premier nuclear science and technology (S&T) organization, a strategic element of Canada's national S&T infrastructure as well as its national innovation system.

In support of the Federal S&T Strategy: *Mobilizing Science and Technology to Canada's Advantage*, AECL has established seven S&T Priorities to which all of its S&T activities are aligned (see insert).

AECL S&T Priorities

1. Understand and address public perceptions of the effects of radiation
2. Enable CANDU technology as a key contributor to Canada's energy portfolio
3. Understand, prevent and mitigate risks associated with nuclear operations and activities
4. Advance the knowledge-base for informed standards and regulation
5. Enhance national and global nuclear security
6. Secure options for future energy needs and sustainability through nuclear technology
7. Develop nuclear technologies and demonstrate their minimal impact on the environment

AECL is also an important enabler for Canada's nuclear industry. As a tier one nuclear nation, Canada is involved in virtually every aspect of the nuclear industry – from uranium mining and processing, to the construction and operation of nuclear power plants, to decommissioning and waste management. AECL contributes to Canada's knowledge advantage in these key areas, positioning the Canadian nuclear industry for success domestically and internationally.

AECL has unique capabilities for working with radioactive materials that, under license from the federal regulator[1], have application in fields important to public policy and to the nuclear sector domestically and internationally. Its public policy roles include: conducting nuclear research and development, producing medical isotopes, and managing legacy and historic nuclear wastes.

[1] The Canadian Nuclear Safety Commission regulates the nuclear sector in Canada.

AECL's value proposition has three key aspects that have a national impact:

- As an advisor to, and agent of, the Government of Canada for public policy purposes
- As an enabler of business innovation and technology transfer
- As a generator of highly qualified people

AECL's Strategic Outcome is that Canadians and the world receive energy, health, environmental and economic benefits from nuclear science and technology, with confidence that nuclear safety and security are assured. This Strategic Outcome is delivered through AECL's Program Activities, which are framed in the AECL Program Activity Architecture (PAA) [2].

AECL's PAA is comprised of six output Program Activities (PAs) delivering results to Government and third-party customers, as well as two enabling PAs:

Output Program Activities:

PA 1.1 **Nuclear Industry Capability:** The Canadian nuclear sector remains safe and productive with access to S&T resources to address emergent technological challenges. Canada is ensured a strong nuclear power sector.

PA 1.2 **Nuclear Safety and Security:** Federal activities, regulations and policies, related to nuclear or radiological issues, are supported by the necessary expertise and facilities.

PA 1.3 **Clean, Safe Energy:** The development of energy technologies that make a beneficial impact on Canada's use of clean energy.

PA 1.4 **Health, Isotopes and Radiation:** Canadians experience health benefits from nuclear S&T.

PA 1.5 **Nuclear Environmental Stewardship:** Federal nuclear sites are clean and healthy environments.

PA 1.6 **Nuclear Innovation Networks:** Canadian S&T communities advance their innovation agendas through access to federal nuclear innovation infrastructure and expertise.

[2] In 2012, the Government Policy for Management Resources and Results Structure changed terminology as follows: Program Alignment Architecture replaces Program Activity Architecture, Program replaces Program Activity, and Sub-Program replaces Sub-Activity. These changes do not alter the definitions, and have not been reflected in this Corporate Plan, but will be reflected in future plans.

Enabling Program Activities:

PA 1.7 **Mission-Ready Science and Technology Infrastructure:** Scientists and engineers from AECL and its partner organizations have access to licensed facilities and services that enable nuclear innovation and production in a safe campus environment that is fully compliant with all legislation for conducting nuclear-related activities.

PA 1.8 **Internal Services:** Provide the business and administrative support functions and infrastructure to enable the efficient and effective delivery of all program outputs.

1.2 AECL Governance and Management Oversight

AECL operates under the strategic direction and oversight of our Board of Directors, which consists of seven members; six that are independent of management, and the President and Chief Executive Officer (CEO). The independent members represent the Canadian business and S&T communities, including members with expertise in the nuclear domain. The Board is accountable to Parliament through the Minister of Natural Resources, and is responsible for the overall governance of AECL. It ensures appropriate mechanisms for financial oversight are in place at AECL, and establishes systems for performance management, risk management, succession planning and stakeholder communications – all with a view to ensuring that AECL has a solid accountability framework and that a sound governance regime is in place to guide both management and the Board.

AECL's Management System comprises the full suite of policies, procedures and arrangements by which line organizations manage and execute Program Activities, and the executive team exercises actionable oversight. AECL has established a new Management System Framework that is being used to evolve the Management System to strengthen compliance with statutory and legislative requirements, while positioning AECL to better align with Government expectations for management excellence.

1.3 Planning Environment

This is a pivotal time in the 60 year history of AECL. The Government of Canada recently undertook a thorough review of AECL and concluded that restructuring was necessary to better position AECL to be more competitive, reduce financial exposure for Canadian taxpayers and improve conditions for the entire nuclear industry to succeed. The Government launched a two-phase process, and in the first phase successfully concluded with the divestiture of AECL's CANDU Reactor Division to Candu Energy Inc. a wholly-owned subsidiary of SNC-Lavalin in October 2011. The divestiture transformed AECL into a stand-alone science and technology organization; AECL Nuclear Laboratories.

The implementation of Phase 2 of restructuring, to be launched in early 2013, will begin with a formal invitation for proposals for greater private-sector engagement in the management and operation of AECL's Nuclear Laboratories. The Government of Canada anticipates that a procurement process of this complexity and magnitude will require approximately two years to complete. The new model aims to bring private-sector rigour and efficiencies to the management of AECL's customer programs, research facilities and technological services. Over time, this transition is expected to achieve a significant reduction in the financial cost and risk for Canadian taxpayers.

Once restructuring is complete, it is the Government's expectation that the Nuclear Laboratories will operate under a private sector business model (i.e., Government-Owned Contractor-Operated (GOCO)).

This Corporate Plan, and the five-year budget projection in this Corporate Plan, has been developed with the expectation that AECL will operate under a private sector business model, this plan includes estimated projections that will begin offsetting Government funding by seeking growth in third-party revenues and margins.

1.4 Strategic Direction

As AECL enters its second year as a stand-alone science and technology organization, the strategic direction over the planning period will be to successfully deliver its value proposition by implementing strategic improvements within key areas of its management system while directly responding to Phase 2 of restructuring.

Based on a strategic analysis that was initiated in August 2012, and subsequent engagements with AECL's Board of Directors and the shareholder, AECL's President and CEO set the following direction for the five year period covered by the plan:

- Respect Nuclear Safety
- Live Within Our Means
- Sustain Value
- Be Ready for Transition
- Adjust Customer-Supplier Arrangements

To deliver on this direction, AECL will focus on two areas that are of particular significance: strategic improvements and strategic capabilities.

Strategic improvements are initiatives to enhance program governance, enhance productivity, stimulate business innovation, and leverage collaborations.

Strategic capabilities include the people, tools and technologies that will enable AECL to: execute current and future Program Activities; contribute to Canada's nuclear S&T industry network; position AECL to address the current and emerging needs of other federal departments and agencies; and give AECL the basis for competitive advantage in the market. AECL will develop these capabilities over the planning period through the creation of ten AECL Centres of Excellence (COE) (see insert). Each COE will have long-term plans that are aspirational in nature, and therefore anticipate the needs of Government, industry, learning institutions, and the public as a whole.

AECL Centres of Excellence

1. Nuclear and radioactive material management
2. Irradiation and post-irradiation services
3. Nuclear safety, security and risk management
4. Radiation biology, radioecology and dosimetry
5. Materials and chemistry in nuclear applications
6. Advanced nuclear fuels and fuel cycles
7. Systems engineering
8. Advanced computing, modelling and simulation
9. Hydrogen and hydrogen isotopes management
10. Environmental remediation and nuclear waste management

1.5 Financial Summary

Consistent with the Government of Canada policy direction, AECL will ensure prudent management of public funds by reducing risk and financial exposure for taxpayers, and by driving value-added results for Canadians. As part of this overall approach, and in an effort to abide by the spirit and intent of the Government's Deficit Reduction Action Plan, AECL had set a goal to reduce operating funding requirements in its 2012 to 2017 Corporate Plan. AECL is currently on track to meet this goal.

This Corporate Plan is informed by the Government's direction on AECL restructuring. Specifically, the five-year financial targets reflect increased AECL work for third-party customers and appropriate cost recovery; a sharpened focus towards a "Government as customer" model; increased efficiencies through private sector management, particularly in decommissioning and waste management work; and a recapitalization program focused to meet nuclear regulatory and safety requirements.

Table 1 provides a high-level summary of the budget projections for the Nuclear Laboratories and the AECL consolidated government funding requirements.

Table 1: AECL Financial Summary

Nuclear Laboratories $ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Revenue/Funding								
Government Funding	483	519	576	529	535	539	528	2,707
Government "B" Base Funding (GEN IV, CRTI)	1	1	2	2	2	2	2	10
Third-Party Revenue	113	122	114	115	130	132	136	627
	597	**642**	**692**	**646**	**667**	**673**	**666**	**3,344**
Direct Program Activity Expenditures								
PA 1.1 - Nuclear Industry Capability	34	42	39	41	37	37	38	192
PA 1.2 - Nuclear Safety and Security	67	58	58	58	58	58	58	288
PA 1.3 - Clean, Safe Energy	19	28	27	28	26	27	27	135
PA 1.4 - Health, Isotopes and Radiation	125	127	100	82	72	67	68	389
PA 1.5 - Nuclear Environmental Stewardship	141	160	198	205	205	209	209	1,025
PA 1.6 - Nuclear Innovation Networks	1	8	12	12	12	12	12	59
PA 1.7 - Mission Ready S&T Infrastructure	179	172	199	186	210	212	212	1,018
PA 1.8 - Internal Services	41	58	50	50	50	50	50	248
	607	**652**	**682**	**661**	**668**	**671**	**672**	**3,355**
Funding Surplus (Deficit)	(10)	(10)	10	(14)	(1)	1	(6)	(10)
Working Capital Requirements	10	10	(10)	14	1	(1)	6	10
Net Cash Flow	-	-	-	-	-	-	-	-

AECL Consolidated $ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Nuclear Laboratories								
Operating Funding	255	250	234	224	212	211	199	1,081
Capital	39	70	88	82	100	100	100	470
Legacy and Historic Wastes	153	174	214	222	222	226	226	1,109
Other	37	25	42	3	3	4	4	57
Total Nuclear Laboratories	484	520	578	531	537	541	529	2,717
Wrap Up Office	212	271	67	-	-	-	-	67
Consolidated Government Funding	696	791	645	531	537	541	529	2,784
Third-Party Revenue	113	122	114	115	130	132	136	627
	809	**913**	**759**	**646**	**667**	**673**	**666**	**3,411**
Expenditures								
Nuclear Laboratories	607	652	682	661	668	671	672	3,355
Wrap Up Office	141	205	38	-	-	-		38
	748	**857**	**720**	**661**	**668**	**671**	**672**	**3,392**
Funding Surplus (Deficit)	61	56	39	(14)	(1)	1	(7)	19
Working Capital Requirements	(61)	(56)	(39)	14	1	(1)	7	(19)
Net Cash Flow	-	-	-	-	-	-	-	-

Note: Minor differences are due to rounding.

Key observations include the following:

- The 2013-2014 financial projections respect the goal AECL made to abide by the spirit and intent of the Government of Canada's Deficit Reduction Action Plan implemented last year. Operating funding requirements from the Government for 2013-2014 are 8.3 percent lower than that provided to AECL by the Government in 2011-2012. This compares favourably to the goal of 7.5 percent.

- Government funding reflects a budget projection that assumes a transition will occur over the next five years whereby AECL will achieve an increase in the amount of third-party revenues to sustain the business. This shift requires both a growth in third-party activity and an adjustment to the management and funding of S&T activities. AECL has projected a reduction in operating funding requirements from $255 million in 2011-2012 to $199 million in 2017-2018. The cumulative reductions in operating funding requirements from Government over the five-year planning period are projected to be $196 million or 22 percent. The reduction is a further $90 million or 12 percent when expressed in 2011-2012 constant dollars which reflects the impact of cost escalation being absorbed from 2012-2013 to 2017-2018. Therefore a total cumulative reduction of $286 million or 34 percent.

- Capital funding is primarily related to the need to upgrade aging infrastructure at AECL. In the later years of the plan, some of the capital expenditures are intended to proceed on a cost sharing basis with third-party customers. The plan does not include any assumptions of the amount of third-party funding which will be available.

- Legacy and historic waste programs are Natural Resources Canada funded programs designed to address environmental remediation issues.

- The Wrap-Up Office was established to manage the retained commercial liabilities held by AECL subsequent to the sale of the CANDU Reactor Division.

- Projected growth in third-party revenues will over the five year period result in an increase in cost recovery from third-parties by $22 million in the fifth year of the plan, with a commensurate off-set in requirements for government funding. The plan estimates that third-party revenues will increase from a projected $114 million in 2013-14 to an estimated $136 million in 2017-18.

- The Corporate Plan assumes that until restructuring has concluded, the capital portfolio will be focused on recapitalization of ageing infrastructure at the Chalk River site that poses the greatest Health, Safety, Security, and Environmental (HSSE) and operational risks. As a result of prior year investments, experience gained and periodic review of the infrastructure capital portfolio, this plan has realized lower funding requirements from Government

early in the Plan, specifically over the next two years, amounting to $33 million compared to the 2012 to 2017 Corporate Plan submission.

- Legacy and historic waste programs, such as the Nuclear Legacy Liabilities Program, are based on approved plans and related funding. They have not been subjected to reductions in support of AECL's goal to abide by the spirit and intent of the Government's Deficit Reduction Action Plan. The expectation is for continued or potentially increased annual Government investment in these areas, so as to provide for the effective reduction of these liabilities.

2 MANDATE

The existing mandate for AECL, a Crown Corporation, flows from the powers given to the Minister of Natural Resources under the Nuclear Energy Act:

- To undertake research with respect to nuclear energy
- To cause nuclear energy to be utilized
- To license, sell or otherwise dispose of discoveries and inventions relating to nuclear energy.

The Government of Canada, through Natural Resources Canada, has been leading the restructuring of AECL. The Government of Canada completed the first phase of its AECL restructuring initiative in October 2011 with the divestiture of AECL's Commercial Operations business to Candu Energy Inc., a wholly-owned subsidiary of SNC-Lavalin. With Phase 1 of restructuring complete, AECL's headquarters were transferred from Mississauga to Chalk River, both in Ontario. The second phase is focusing on the long-term mandate, governance and management structure of the Nuclear Laboratories, the remaining component of the Corporation.

2.1 Nuclear Laboratories

The Nuclear Laboratories have unique capabilities of working with radioactive materials that, under license from the federal regulator, have application in fields important to public policy and to the nuclear sector domestically and internationally. Its existing public policy role includes:

- Conducting nuclear research and development
- Producing medical isotopes
- Managing legacy and historic nuclear wastes

The AECL Corporate Plan provides a five year outlook on the implementation of the Government's direction on restructuring of AECL Nuclear Laboratories, and by doing so will enable AECL to proceed in a systematic manner during the transition period.

2.2 Wrap-Up Office

The Wrap-Up Office manages the retained liabilities of AECL's CANDU Reactor Division that were not part of the sale to Candu Energy Inc. The responsibilities of the Wrap-Up Office include management of outstanding obligations, claims and litigation related to Commercial Operations, management of the remaining Life Extension Projects that are sub-contracted to Candu Energy Inc., and management of the Government funding provided to complete Enhanced CANDU 6 (EC6) reactor technology development.

3 CORPORATE PROFILE

3.1 Introduction

AECL is an agent Crown Corporation of the Government of Canada reporting to Parliament through the Minister of Natural Resources. It is governed by a Board of Directors which provides strategic direction and advice to the President and Chief Executive Officer.

AECL's vision is to be a global partner in nuclear innovation.

Its strategic outcome is: Canadians and the world receive energy, health, environmental and economic benefits from nuclear science and technology with confidence that nuclear safety and security are assured.

With a complement of 3,200 full-time employees (as at December 2012), AECL is a strategic part of Canada's national S&T infrastructure and national innovation system. As Canada's premier nuclear S&T organization, AECL provides crucial policy, program and innovation support to the Government of Canada, the Canadian nuclear industry and Canadian academia.

3.1.1 Nuclear Laboratories

In alignment with the Government of Canada's S&T strategy, *Mobilizing Science and Technology to Canada's Advantage*, AECL's Nuclear Laboratories organization leverages its unique capabilities in working with radioactive materials to contribute to four principal Government of Canada outcome areas:

- An innovative and knowledge-based economy
- A clean and healthy environment
- Healthy Canadians
- A safe and secure Canada

AECL's value proposition has three key aspects that have a national impact:

- As an advisor to, and agent of, the Government of Canada for public policy purposes
- As an enabler of business innovation and technology transfer
- As a generator of highly qualified people

Advisor to, and agent of, the Government of Canada for public policy purposes
The Nuclear Laboratories is relied upon for the provision of unbiased information related to nuclear S&T, providing advice in support of Government in its various capacities: policy maker, regulator, operator, performer, customer, and partner for S&T in the public good. Today, the Nuclear Laboratories is an agent of the Government in several matters of public policy, including:

- Management and disposition of liabilities associated with legacy and historic wastes resulting from past development of nuclear technology and nuclear energy in Canada.

- Development of policies, practices and national capabilities to address nuclear safety and security, including strengthening of non-proliferation and counter-terrorism regimes.

- Provision of medical isotopes to Canadians. As one of the world's largest producers of radionuclides, the National Research Universal (NRU) reactor is a multi-purpose research reactor that is Canada's premier facility for nuclear power and materials research. The NRU reactor produces a range of radioisotopes, including molybdenum-99 (Mo-99), iodine-125 and -131, iridium-192, xenon-133 and cobalt-60 that are used for medical imaging, cancer diagnostics and therapy.

The Government of Canada has previously announced the intention to end the NRU supply of Mo-99 beyond 2016. Otherwise going forward, it is expected that the Nuclear Laboratories will continue to be an agent of Government in the public policy areas as outlined above.

Enabler of business innovation and technology transfer
The Nuclear Laboratories has had a strong record of positioning the Canadian nuclear industry, including its full value chain, for third-party success domestically and internationally. Going forward, the Nuclear Laboratories will continue to engage with the best and brightest innovators and entrepreneurs from around the world, keeping home-grown talent in Canada and stimulating innovation throughout the industry and its supply chain. Greater engagement with businesses will also result in greater revenues to offset the requirement for federal funding.

As a service provider to Candu Energy Inc. and the wider Canadian nuclear industry, the Nuclear Laboratories plays a crucial role in assisting its partners to maintain and enhance the performance of the CANDU fleet, to develop new technologies for a broad range of nuclear power and non-power applications, and to advance the next generation of reactors, fuels, and energy solutions.

Generator of Highly-Qualified People
With its capability for knowledge generation, innovation and discovery, the Nuclear Laboratories supports an extensive network of stakeholders, clients and partners.

The Nuclear Laboratories provides access to the unique environment needed to develop the advanced workforce required for a knowledge-based economy. Generations of Canadians along the nuclear S&T value chain have benefited from access to the organization's laboratories, facilities and highly-trained staff. An examination of the human capital resident in both the Canadian nuclear S&T community and the Canadian nuclear industry community reveals that many have had a deep and enduring connection to the company.

As a result of the Nuclear Laboratories operations, Canada's next generation of outstanding nuclear scientists, engineers, operators and entrepreneurs are being trained. The Nuclear Laboratories will continue to support the development of highly qualified people for the public sector, private sector and academia by ensuring its activities continue to be oriented toward those areas that are relevant to the priorities of the Government of Canada.

3.1.2 Wrap-Up Office

The activities of the Wrap-Up Office are funded by the Government of Canada on an annual basis, separate from the activities of the Nuclear Laboratories, according to an annual plan developed by the Wrap-Up Office under joint oversight by AECL and Natural Resources Canada.

3.2 History

AECL was incorporated under Part 1 of the *Companies Act,* 1934, by way of Letters Patent dated February 14, 1952. The Corporation applied for, and was granted, continuance under the *Canada Business Corporations Act* on July 8, 1977; amended July 15, 1982. AECL, through its Board of Directors, is part of the portfolio responsibility of the Minister of Natural Resources Canada.

In May 2009, after an extensive review of AECL, the Government of Canada concluded that AECL's mandate and structure limited its success and development, and that restructuring would help to maximize benefits for Canada. The review noted the distinct mandates and resource and management needs of the two divisions of AECL: CANDU Reactor Division (the commercial arm) and the Nuclear Laboratories.

Subsequently, the Government made the decision to restructure AECL in two phases: the first phase was to determine how best to proceed with CANDU Reactor Division; the second phase is how best to proceed with the Nuclear Laboratories. The Government identified three policy objectives for AECL's future direction and structure as a result of restructuring:

1. Canada needs safe, reliable and economical alternatives to address its energy and environmental needs.

2. Cost to the Federal Government needs to be controlled and the return on its investment maximized.

3. Canada's nuclear industry needs to be positioned to seize domestic and global opportunities.

On October 2, 2011, the Government completed the divestiture of AECL's CANDU Reactor Division to Candu Energy Inc., a wholly-owned subsidiary of SNC Lavalin Group Inc., and as a result AECL's mandate now excludes the commercial activities related to the design, development, construction, servicing and refurbishment of nuclear power reactors.

The implementation of Phase 2 of restructuring will be launched in early 2013. Section 4.1 outlines AECL's strategic considerations of restructuring over this five year Corporate Plan.

3.3 AECL's Program Activity Architecture

To achieve AECL's strategic outcome, results are delivered through six externally focused Program Activities (PAs) and two supporting/enabling Program Activities that together form AECL's Program Activity Architecture (PAA) [3].

This PAA structure, which aligns to the model used by the Government, had been adopted in 2011 to improve how AECL plans, executes, and assesses the multi-year activities conducted by the Nuclear Laboratories. AECL has been advancing the use of the PAA by making minor adjustments to the structure to ensure improved alignment of activities.

The six output PAs are:

1. **Nuclear Industry Capability:** The Canadian nuclear sector remains safe and productive with access to S&T resources to address emergent technological challenges. Canada is ensured a strong nuclear power sector.

2. **Nuclear Safety and Security:** Federal activities, regulations and policies, related to nuclear or radiological issues, are supported by the necessary expertise and facilities.

3. **Clean, Safe Energy:** The development of energy technologies that make a beneficial impact on Canada's use of clean energy.

[3] In 2012, the Government Policy for Management Resources and Results Structure changed terminology as follows: Program Alignment Architecture replaces Program Activity Architecture, Program replaces Program Activity, and Sub-Program replaces Sub-Activity. These changes do not alter the definitions, and have not been reflected in this Corporate Plan, but will be reflected in future plans.

4. **Health, Isotopes and Radiation:** Canadians experience health benefits from nuclear S&T.

5. **Nuclear Environmental Stewardship:** Federal nuclear sites are clean and healthy environments.

6. **Nuclear Innovation Networks:** Canadian S&T communities advance their innovation agendas through access to federal nuclear innovation infrastructure and expertise.

These activities are supported by the following two enabling activities:

7. **Mission-Ready Science and Technology Infrastructure:** Scientists and engineers from AECL and its partner organizations have access to licensed facilities and services that enable nuclear innovation and production in a safe campus environment that is fully compliant with all legislation for conducting nuclear-related activities.

8. **Internal Services:** Provide the business and administrative support functions and infrastructure to enable the efficient and effective delivery of all program outputs.

Table 2 summarizes the PAA for the Nuclear Laboratories and its alignment with the Government of Canada's outcome areas.

A detailed description of each PA is provided in Section 6 of this Corporate Plan, along with a highlight of achievements, objectives for a three-year period, and a summary of each PA's reference level budget. Further financial details are provided in Section 7.

Table 2: Nuclear Laboratories Program Activity Architecture

Federal Outcome Area	A Clean and Healthy Environment	Healthy Canadians	A Safe and Secure Canada	An Innovative and Knowledge-based Economy

AECL Strategic Outcome	**Strategic Outcome 1:** Canadians and the world receive energy, health, environmental and economic benefits from nuclear science and technology, with confidence that nuclear safety and security are assured.

DIRECT OUTPUT

PA 1.1 Nuclear Industry Capability

1.1.1 CANDU Energy & Other Industry Support
1.1.2 CANDU Owners Group (COG) Support
1.1.3 Technology Development for the CANDU Industry
1.1.4 Heavy Water Management

PA 1.2 Nuclear Safety and Security

1.2.1 Non-proliferation & Counter-terrorism
1.2.2 Nuclear Response
1.2.3 Nuclear Materials Handling
1.2.4 Nuclear Safety Technology

PA 1.3 Clean, Safe Energy

1.3.1 Generation IV Technologies
1.3.2 Tritium and Fusion Technologies
1.3.3 Hydrogen Technologies
1.3.4 Sustainable Energy Technologies
1.3.5 Materials Science and Chemistry
1.3.6 Small Reactors

PA 1.4 Health, Isotopes and Radiation

1.4.1 Isotope Production
1.4.2 Isotope Supply Reliability
1.4.3 Isotope Legacy Obligations
1.4.4 Radiation Biology and Health

PA 1.5 Nuclear Environmental Stewardship

1.5.1 AECL Nuclear Legacy Liabilities
1.5.2 Whiteshell Decommissioning
1.5.3 Port Hope Area Initiative
1.5.4 Historic Wastes
1.5.5 Environmental Technologies
1.5.6 Nuclear Waste Services
1.5.7 Environmental Management

PA 1.6 Nuclear Innovation Networks

1.6.1 Canadian Neutron Beam Centre
1.6.2 Nuclear Innovation Partnerships
1.6.3 Nuclear Workforce of the Future

SUPPORTING / ENABLING

PA 1.7 Mission-Ready Science & Technology Infrastructure

1.7.1 NRU Reactor Readiness
1.7.2 Nuclear Facilities Readiness
1.7.3 Nuclear Waste Management Readiness
1.7.4 Facility Development
1.7.5 Provision of Real Property & Municipal Facilities
1.7.6 Infrastructure Revitalization

PA 1.8 Internal Services

1.8.1 Human Resources Management
1.8.2 Management & Oversight
1.8.3 Communications
1.8.4 Legal
1.8.5 Financial Management
1.8.6 Information Technology
1.8.7 Business Development
1.8.8 Strategic Initiatives
1.8.9 Supply Chain Management

3.4 Corporate Governance

3.4.1 Board of Directors

AECL operates under the strategic direction and oversight of its Board of Directors, which consists of seven members, six that are independent of management plus the President and CEO (see Appendix 5). The independent members represent the Canadian business and S&T communities, including members with expertise in the nuclear domain. The corporate governance structure of AECL is similar to that of other corporations incorporated pursuant to the *Canada Business Corporations Act* with the exception that AECL's Directors, the Board Chair and the President and Chief Executive Officer are appointed by the Government of Canada by Order-in-Council. Directors are normally appointed for a term of three years and are eligible for re-appointment on the expiration of their term. Incumbent directors continue in office until their successors are appointed. The Board is accountable to Parliament through the Minister of Natural Resources.

The Chair of the Board, currently appointed for a one year term, is responsible for the effective operation of the Board of Directors; including setting the tone for good corporate governance, generating the governance environment within which the Board fulfills its responsibilities, and embodying the values that are essential to good corporate governance, and effective Board operations.

The President and CEO, currently appointed for a two-year term, is accountable for the achievement of the vision, mission and mandate of AECL as set by the Board of Directors and confirmed by the Federal Government. The President and CEO is responsible for running the day-to-day business of AECL and provides strategic guidance, leadership, management and control over all activities of the Corporation. The President and CEO represents the Corporation externally in its relationships with the federal government officials and other relevant stakeholders, and is ultimately responsible for all aspects related to strategy, policy implementation, administration and day-to-day operations of the Corporation.

The Board is responsible for the overall governance of AECL. It ensures appropriate mechanisms for financial oversight are in place at AECL, and establishes systems for performance management, risk management, succession planning and stakeholder communications – all with a view to ensuring that AECL has a solid accountability framework and that a sound governance regime is in place to guide both management and the Board.

Figure 1: AECL Board Structure

The Board is supported by two committees: the Audit Committee and the Human Resources and Governance Committee (Figure 1).

The Audit Committee consists of members that are independent of management. The CEO is the liaison between the Audit Committee and management, and does not vote. The Audit Committee has a mandate for overseeing the independent auditors, directing the internal audit function and assessing the adequacy of AECL's business systems, practices and financial reporting, in accordance to the *Financial Administration Act*. The Audit Committee meets with management, the internal auditor and independent auditors on a regular basis to discuss significant issues and findings, in accordance with their mandate. The independent auditors and internal auditor have unrestricted access to the Audit Committee, with or without management's presence.

The Audit Committee ensures that the development of the Corporate Plan is in alignment with the direction provided by the Board, and reviews the Plan before it is reviewed and approved by the Board of Directors and submitted to the Minister of Natural Resources.

The Human Resources and Governance Committee oversees the areas of human resources, organizational health, safety, including nuclear safety, security and environment, and corporate governance.

The Board of Directors recognizes that effective governance requires continuous improvement of corporate processes and practices necessary to ensure a high level of accountability to stakeholders. The Board regularly assesses its effectiveness and functioning through an assessment process that considers best practices in corporate governance. The Board has also created Director Standards that set out the skills and criteria required to be an effective member of the Board of Directors. These criteria are aligned with the Corporate Governance Guidelines for Crown Corporations issued by the Privy Council Office, and an orientation process is in place to familiarize new Directors with the standards.

3.4.2 Executive Team

The Executive team (Figure 2) leads the company in response to Board and CEO direction and guidance. Through the CEO, it is accountable to the Board for establishing and sustaining the HSSE posture for the company, for corporate and operational decision making and managing corporate risks, for implementing strategic direction and meeting corporate and financial objectives, for establishing and implementing strategies for managing company capabilities, for directing and overseeing the planning and execution of projects, for planning and allocating enterprise resources, and managing organizational change. The executive team comprises the President and CEO and Vice-Presidents. It meets as an Executive Committee systematically and as required in multiple formats, consistent with exercising actionable strategic, operational

and tactical oversight aligned with the AECL's Governance and Management System Framework, as described below.

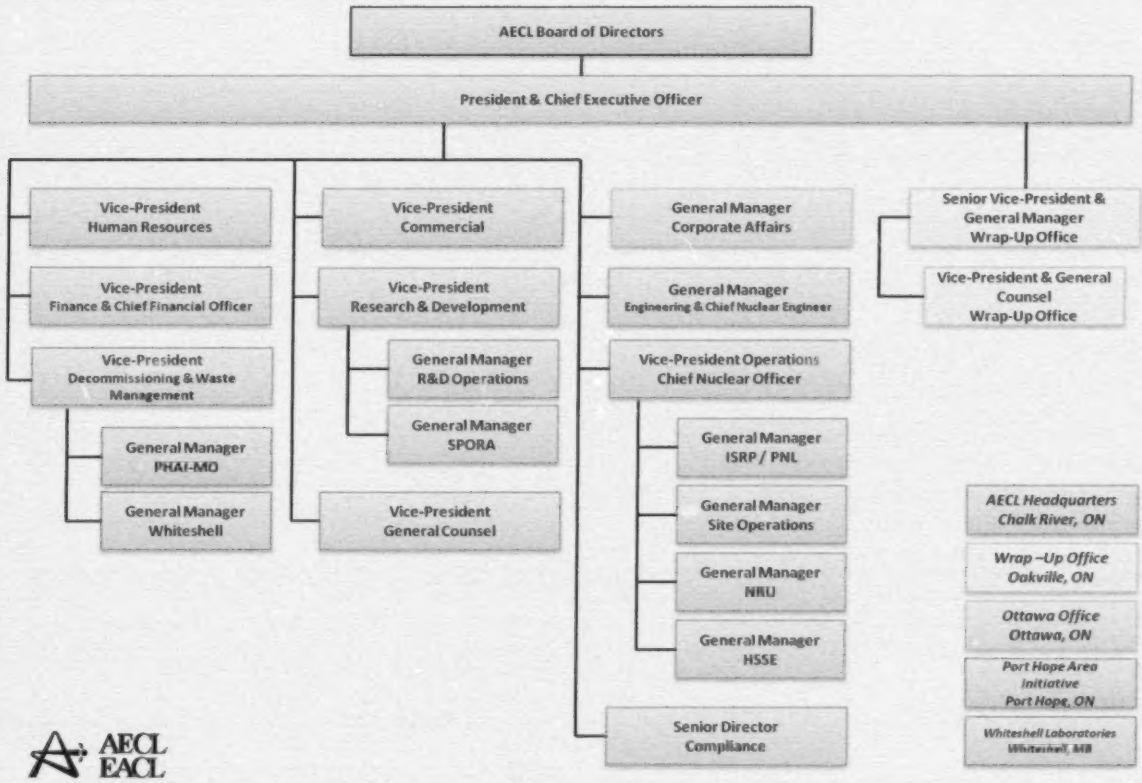

AECL Board of Directors
President & Chief Executive Officer
Vice-President Human Resources
Vice-President Finance & Chief Financial Officer
Vice-President Decommissioning & Waste Management
General Manager PHAI-MO
General Manager Whiteshell
Vice-President Commercial
Vice-President Research & Development
General Manager R&D Operations
General Manager SPORA
Vice-President General Counsel
General Manager Corporate Affairs
General Manager Engineering & Chief Nuclear Engineer
Vice-President Operations Chief Nuclear Officer
General Manager ISRP / PNL
General Manager Site Operations
General Manager NRU
General Manager HSSE
Senior Director Compliance
Senior Vice-President & General Manager Wrap-Up Office
Vice-President & General Counsel Wrap-Up Office
AECL Headquarters Chalk River, ON
Wrap –Up Office Oakville, ON
Ottawa Office Ottawa, ON
Port Hope Area Initiative Port Hope, ON
Whiteshell Laboratories
AECL
EACL

Figure 2: Organization Chart

3.4.3 Governance Framework

Subsequent to the first phase of AECL restructuring, which was implemented in October 2011, the Nuclear Laboratories became the singular company focus . As such, AECL took action to adjust its corporate governance and decision making policies and procedures. This phase of restructuring gave an opportunity for AECL management to critically assess existing oversight processes in comparison to best practices in the global nuclear industry and in nuclear laboratories in other nations. As a result, AECL has now instituted a new governance framework that addresses the complex and unique needs of a multi-mission nuclear S&T organization spanning public and private sector customers and stakeholders, operating in a highly regulated environment. It also is designed to position the company to better respond to future restructuring activities.

In this context, a new "Management System Framework" (Figure 3) has been established through which AECL managers are trained and held accountable. It ensures an integrated perspective on all aspects of company management. It improves the integration and coverage of executive and Board level oversight. It reflects best of class management practices as seen in the nuclear industry consistent with expectations of AECL regulators. AECL has established this customized Framework to drive excellence through six areas of management. These are described as follows:

Alignment and Integration Management: Integrated corporate governance, strategic direction, planning, financial management, and risk management drives organizational alignment.

Program Activity Management: Customers receive benefits through efficient, effective delivery of results for customers.

Health, Safety, Security and Environment (HSSE) Management: AECL manages HSSE risk and operates in full compliance with statutory and legislative requirements.

People Management: AECL fosters a culture of leadership, value and ethics, and employee engagement and development.

Capability Management: AECL strategically develops and maintains core capabilities to respond to the needs of current and future customers.

Improvement Management: AECL implements strategic, sustainable change.

Each of these areas has been assigned an Executive Champion who is accountable to the CEO for establishing oversight and accountability mechanisms and for providing recommendations to inform decision making and strategic planning.

Figure 3: AECL Management System Framework

3.4.4 Business Planning Cycle

AECL's business planning cycle consists of three key phases: prior fiscal year wrap-up, new fiscal year launch, and in-year activities.

The first phase of the business planning cycle, **prior fiscal year wrap-up**, covers the period from March to June, and includes year-end activities such as completion of it's Financial Audit, and production of the AECL Annual Report.

The second phase, **new fiscal year launch,** covers the period from August to March, and commences with the strategic planning process where AECL management performs an environmental scan, assesses internal capabilities, incorporates specific direction from Shareholder and customers, and engages the Board of Directors to confirm the strategic direction for the next five years. The Corporate Plan is prepared incorporating this strategic direction, and establishes specific financial, operational, and improvement objectives for the organization over the next five year period. The Plan is prepared in compliance with the Financial Administration Act (FAA) and the Crown Corporation Corporate Plan, Budget and Summaries Regulations.

In response to the strategic direction of the Corporate Plan (Section 5), three sets of operational plans are prepared:

- Program Activity Plans are 3-year rolling plans that establish the plans and respective budgets to project level by which the PA will achieve Corporate Plan and customers objectives. Each PA has an executive Champion accountable to the CEO for plan development and for in-year oversight of execution.

- Strategic Initiatives Plans manage strategic organizational change arising from the Corporate Plan. The actions supporting these plans are often executed through projects in multiple Program Activities; for example, Productivity Enhancement is a key strategic initiative at AECL that is supported and executed through multiple projects. Each Strategic Initiative has an executive champion accountable to the CEO for plan development, including performance measures and for in-year oversight of execution.

- Management Area Plans manage the actions to drive the evolution of AECL's management system framework in response to the Corporate Plan expectations (see Section 5.3). These actions are executed through projects in the Program Activities. Each Management Area has an executive champion accountable to the CEO for plan development, including performance measures and for in-year oversight of execution.

The third phase of the business planning cycle, **current year execution, monitoring and reporting**, involves elements such as performance, financial oversight,

performance assessment, reviews, and reporting. The accountable executive champion for each of the Program Activities, Strategic Initiatives, and Management Areas assesses performance against measures, monitors potential risks to execution, and reports progress regularly to the Executive Committee. When required, in response to changing conditions or a change in customer requirements, adjustments to the plans are managed through a defined change control process.

4 STRATEGIC CONSIDERATIONS FOR THE PLANNING PERIOD

This Corporate Plan has been developed in response to two significant areas of influence: AECL Restructuring and key Situational Risks. AECL's Strategic Direction (Section 5) subsequently outlines specific steps that will be taken in response to these considerations through the Management System Framework, with Sections 6 and 7 further defining the specifics of how this direction will be implemented.

4.1 Restructuring of AECL

In May 2009, after an extensive review of AECL, the Government of Canada concluded that restructuring was necessary to position AECL to better compete in the global marketplace; reduce taxpayers' financial exposure; and, create better conditions for the entire nuclear industry to succeed.

The Government subsequently launched a two-phase process, and in Phase 1, successfully concluded the sale of AECL's CANDU Reactor Division to Candu Energy Inc., a wholly-owned subsidiary of SNC-Lavalin in October 2011.

The implementation of Phase 2 of restructuring, to be launched in early 2013[4], will begin with a formal invitation for proposals for greater private-sector engagement in the management and operation of AECL's Nuclear Laboratories. The Government of Canada anticipates that a procurement process of this complexity and magnitude will require approximately two years to complete. The new model aims to bring private-sector rigour and efficiencies to the management of AECL's customer programs, research facilities and technological services. Over time, this transition is expected to achieve a reduction in the financial cost and risk for Canadian taxpayers.

The Government of Canada's intention is to focus AECL on three key objectives:

- Address legacy liabilities accumulated during the 60 years of nuclear research and development at AECL's Chalk River Laboratories and Whiteshell Laboratories. The Government will challenge the private sector to participate in the development of technologies and approaches that will help accelerate this process, as well as to strengthen Canada's capacity to leverage third-party opportunities in this field globally.

- Ensure that Canada's premier nuclear S&T capabilities and knowledge continue to support the Government of Canada in fulfilling its nuclear obligations and responsibilities, from health protection and public safety to security and environmental protection.

[4] "Canada's Nuclear Industry: Positioning for the Future" speech to Canadian Nuclear Association by Minister of Natural Resources on February 28, 2013.

- Provide access to AECL facilities and resources to address industry's need for in-depth nuclear science expertise. This will include ongoing access for owners and operators of CANDU reactors as well as the broader nuclear supply chain in Canada. Over time, the goal is to move the delivery of AECL's science and technology services to full cost recovery for its industry customers.

As part of Phase 2 of restructuring, AECL expects the Government may invite proposals from industry for a forward-looking, industry-driven, nuclear innovation agenda, framed in a cost-shared structure. This will be informed by a Government decision on potential investments in an innovation agenda and related infrastructure, including whether to replace the aging National Research Universal (NRU) reactor with a new multi-purpose research reactor.

By putting AECL on a more secure footing and by introducing private-sector discipline and commercial vision, the Government of Canada will ensure the tradition of excellence in nuclear S&T at AECL will continue in support of the needs of Canada.

AECL will continue to work closely with the Government to ensure it maintains the appropriate legal, governance, and management framework during transition, and to address key operational considerations such as the renewal of collective agreements for AECL employees, implications for site operating licences and other matters of significance.

Once restructuring is complete, it is the Government's expectation that the Nuclear Laboratories will operate under a private sector business model (i.e., Government-Owned Contractor-Operated (GOCO)). The five-year budget projection in the 2013 to 2018 Corporate Plan has therefore been developed with this expectation in mind, focused on the following strategic considerations:

1. **Transitioning to full-cost recovery for all work performed at AECL.** The Government has concluded that current AECL customers do not adequately contribute to site overhead costs. The budget projection in the 2013 to 2018 Corporate Plan therefore assumes a transition will occur over the next five years that will see an increase in the amount of third-party recovery to these overheads through pricing and/or contributions on an annual basis. All cost recovery will be fully justified.

2. **Adjusting the management and funding of S&T activities.** The introduction of the Program Activity Architecture has shown that beyond addressing nuclear legacy liabilities, there are many other activities undertaken at AECL for which Government is a customer. The projection in the 2013 to 2018 Corporate Plan recognizes continued focus on accurately identifying and costing these Government as customer activities and, consistent with Government's

expectation, assumes the ratio of revenues from third-parties to Government will increase.

3. **Introducing further efficiencies through private-sector management.** The 2013 to 2018 Corporate Plan shows a reduction in site overheads over the ensuing five years. The projection in the 2013 to 2018 Corporate Plan assumes that overheads associated with S&T and decommissioning activities will continue to decrease through restructuring to a level that private-sector management is anticipated to achieve.

4. **Ramping up waste and decommissioning effort for effective and efficient elimination of the nuclear liabilities,** in line with Nuclear Legacy Liabilities Program (NLLP) renewal. The budget projections in the 2013 to 2018 Corporate Plan reflect an achievable increase in decommissioning activity over the next five years, driven by two factors: the advancement of major projects from the design to construction phase, and the adoption of an accelerated approach to decommissioning facilities that reduces the cost of care and maintenance in the longer term.

5. **Continuing the operation of NRU.** Although the Government of Canada has signalled its intent that NRU will not produce Mo-99 beyond 2016, the 2013 to 2018 Corporate Plan assumes that NRU will operate beyond 2016 to meet the S&T and testing needs of Canadian industry and academia. It is recognized, however, that adjustments to the NRU strategy may need to be made in 2014 following the Government's decision on a future nuclear innovation agenda. For the purposes of this Plan, AECL has planned for a scenario where the NRU will be relicensed for an additional five years at the end of its current license period ending October 2016.

6. **Focusing recapitalization on enabling infrastructure,** and reducing Government risks and costs in the medium term. The 2013 to 2018 Corporate Plan assumes, until restructuring has concluded, the capital portfolio will be limited to the items of ageing infrastructure that pose the greatest HSSE and operational risks, while also maintaining AECL's overall capability for future business activities.

4.2 Situational Risks

AECL recognizes risk management as an integral part of sound strategic planning and corporate governance. Risks that have the potential to impede AECL's progress have been identified and mitigating actions have been put in place.

Federal and Provincial Government Policy

The external political and policy environments in Canada significantly impact AECL. The corporation is affected by federal and provincial policies and decision-making in the areas of nuclear energy and S&T.

Some relevant risks to AECL are as follows:

- Ontario's nuclear energy policy decisions in terms of the timing and scale of reactor refurbishments and the construction of new reactors can impact AECL's provision of services and support to the nuclear industry. In a slow-growth scenario, AECL will take steps to support an innovative domestic nuclear supply chain as it accesses other nuclear markets internationally. In an expansionary scenario, AECL will make best efforts to ensure that Ontario has the nuclear lab facilities and people it relies upon to support the underlying science and technology of the province's nuclear energy program.

  Saskatchewan has shown increased interest in growing provincial capability across the spectrum of small-medium nuclear reactor (SMR) technology, as well as the possible deployment of nuclear power. If Saskatchewan announces a decision to pursue a SMR project, it may require strategies to support new areas of technology, safety, regulation and waste management.

- In Quebec, decisions regarding the future of the Gentilly-2 nuclear power plant have been made. However, a strategy to decommission both Gentilly-1 and Gentilly-2 at the same time has not been established, and could possibly impact the nuclear liabilities program and test AECL's capacity to respond, in light of significant ongoing decommissioning and waste management programs. Multi-level consultations will be needed to develop a go-forward plan.

- The federal government has indicated that AECL may be mandated to play a role in providing research and testing to support CNSC's comprehensive understanding of nuclear safety, in order to apply the appropriate regulatory standards. AECL will take steps to explicitly separate the management and execution of CNSC support activities from activities that are distinctly regulated by the CNSC.

- Should AECL scale back its unique lab capabilities to reduce costs, it may no longer be in a position to respond to new S&T demands that may arise in the years ahead. AECL will seek to sustain funding levels by replacing reduced government funding via full cost-recovery from a growing order book, and increase work executed for industry. New opportunities can be funded by rebalancing program spending to support growth in third-party revenues.

Throughout the restructuring process, AECL will take steps to sustain the required capabilities that will enable it to address the above policy-related risks, while at the same

time retaining the capability to secure emerging opportunities. By doing so, AECL will sustain its value to Canada, and be better positioned to be adaptable, anticipating future demands as the policy environment evolves.

Fukushima Implications
The earthquake and tsunami that disabled the Fukushima Daiichi nuclear plant in March 2011 highlighted the need for all nuclear facilities to assess their capability to withstand and respond to credible external events, such as earthquakes, and, where necessary, make improvements to their facilities and their emergency response capability.

AECL Nuclear Laboratories had conducted such assessments, and has now started to implement projects to address Beyond Design Basis Events for the NRU reactor and the Chalk River site. AECL has also begun to strengthen the documentation for Severe Accident Management and to improve Emergency Response capabilities for such events.

Retained Liability Claims
As a result of past third-party relationships, AECL faces potential liability claims. AECL will ensure that it is fully prepared to robustly represent corporate and shareholder interests.

Isotope Business
As AECL approaches the planned wind-down of Mo-99 production by 2016, volumes and pricing within the Mo-99 market are becoming increasingly difficult to forecast.

AECL is mandated to provide Mo-99 production capability through 2016. To mitigate risks, AECL will continue to optimize internal processes to deliver Mo-99 by improving efficiencies and increasing workforce flexibility. Additionally, AECL will focus on opportunities for new business growth. See Section 7.4, Third-Party Revenues for further details.

Nuclear Industry Customers
AECL may experience business impacts as a result of market conditions affecting nuclear industry customers (cancellation of the Gentilly-2 life extension project, for example). In addition, AECL's approach to achieving full cost recovery over time will result in customers possibly seeking alternative suppliers, therefore AECL must provide greater total value for its customers.

AECL is managing market risk by focusing on areas where unique Nuclear Laboratories resources and competencies add value to industry by addressing technology issues, such as enhancing safety and the economic performance of nuclear reactors (CANDU

and other technology platforms). AECL is also securing opportunities for new business in other industries.

Restructuring Implementation

With the sale of AECL's Commercial Operations business, AECL became a stand-alone federal S&T organization contributing to economic, security, health, and environmental outcomes on behalf of the Government of Canada. AECL addressed logistical challenges to ensure that systems and processes were in place to enable the Nuclear Laboratories to operate successfully, and to prepare for the upcoming phase of restructuring.

As the next phase of AECL restructuring moves forward, there will be challenges that need to be managed. In the meantime, AECL, in support of Natural Resources Canada, has been preparing for transition by developing detailed plans that address the implications and requirements for restructuring.

Restructuring-Compliant Management System

The Phase 1 restructuring of AECL resulted in a change to the company's structure and mandate. To support its new mandate, AECL executive management have since been overhauling the management system, beginning with the implementation of a new PAA. A management system, designed to accommodate restructuring and is tailored to the needs of a federal S&T organization, will be implemented during the planning period.

The management system and its various areas as presented in Section 3.4.3 have established clear expectations with underlying priorities. AECL will work closely with Natural Resources Canada to ensure that changes to its management system are directionally consistent with the target business model of the restructured organization.

People Management

Employee attraction, retention and engagement, along with the reshaping of AECL's workforce through attrition and redeployment, are key people-management challenges expected during restructuring. Workforce planning and talent-management strategies are targeted to ensure that AECL is sufficiently positioned to deal with people management risks. Plans to mitigate risks include the identification of critical positions, key employee retention, succession and knowledge management.

Cultural change and employee engagement initiatives are planned to align with guiding principles of respecting nuclear safety, living within our means, sustaining value and being transition ready. The focus of these initiatives is on reinforcing the trust relationship between AECL, its employees and unions. At the core of AECL's change leadership is a dedication to regular and transparent communications with employees and stakeholders.

Waste and Decommissioning Liabilities Management

The Nuclear Legacy Liabilities Program has approved funding in place up to March 2014. Program assumptions and estimates for the remaining four years are being updated as part of the planning cycle. AECL will work closely with Natural Resources Canada to define an optimal program that considers and mitigates potential impacts via reprioritizing projects, engaging the supply chain (contracting), workforce training and other adjustments.

Health, Safety, Security and Environment (HSSE)

Program execution at AECL requires that a high priority be placed on HSSE matters. HSSE-related activities are wide-ranging and include nuclear and industrial safety, environmental, infrastructure, regulatory compliance, training and leadership, work practices and Information Technology (IT) security.

Active tracking of HSSE indicators provides a measurement of how well systemic risks are being mitigated at AECL sites. AECL will continue to ensure that it has an integrated and robust oversight framework to proactively plan, track and report HSSE-related activities, and make adjustments according to active risk assessment. HSSE-related activities will be integrated into projects in all program areas, and monitored to ensure that AECL is fully meeting regulatory and legal requirements.

5 Strategic Direction

Starting in August, as a part of the New Year Launch phase of AECL's Business Planning Cycle, (see Section 3.4.4), AECL management performs an environmental scan, assesses internal capabilities, incorporates specific direction from Shareholder and customers, and engages the Board of Directors to establish the strategic direction for the next five years.

As AECL enters its second year as a stand alone science and technology organization, the strategic direction over the planning period will be to successfully deliver its value proposition by implementing strategic improvements within key areas of its management system while responding to the strategic considerations in Section 4. Specific guidance is captured in direction set by the AECL President and CEO, endorsed by the AECL Board and Shareholder.

5.1 CEO Direction

AECL's intention, as determined by AECL's CEO, in consultation with and endorsed by its Board and Shareholder, is to continue on its course of improvement and to deliver on its value proposition, according to the following direction:

- **Respect Nuclear Safety:** As owner and operator of Canada's most complex nuclear facilities, nuclear safety will be our overriding priority.
- **Live Within Our Means:** AECL will deliver on its commitments within reference levels established in the previous year's (2012 to 2017) Corporate Plan and will achieve the planned reductions that contribute to AECL's goal to abide by the spirit and intent of the Government's Deficit Reduction Action Plan.
- **Sustain Value:** AECL will maintain strategic capabilities (people and facilities), shareholder relationships and standards of operation related to HSSE so as to preserve the value of AECL as the company transitions through restructuring.
- **Be Ready for Transition:** AECL and its people will be prepared to undergo a smooth transition through restructuring, while continuing to focus on Government priorities.
- **Adjust Customer-Supplier Arrangements:** Over the five year planning period, AECL relationships with its Government and third-party customers will adjust to reflect restructuring direction.

5.2 Science and Technology Priorities

In 2011-2012, AECL established seven Science and Technology (S&T) priorities (Table 3) to guide the focus of AECL's Output Program Activities. These priorities, which support the federal S&T strategy *Mobilizing Science and Technology to Canada's Advantage*, follow directly from AECL's Strategic Outcome and Value Proposition. They align with items of national importance and represent issues for which AECL's shareholder require input and guidance in the public good. These S&T priorities are intended to address the needs of AECL's many stakeholders, including the federal government, industry (nuclear and non-nuclear), the academic community and international organizations with which AECL closely interacts (e.g., the International Atomic Energy Agency (IAEA)).

Delivering on the S&T priorities is achieved through all six output PAs. Individual projects are selected based both on customer needs and on their alignment with these priorities. Key performance metrics are monitored throughout the year to assess progress. On a cycle of every three to five years, as part of the Strategic Planning process, the priorities are re-assessed to ensure that adequate progress is being made and that they adequately respond to the external environment.

Progressing the S&T priorities is achieved not only in all that AECL does, but also through the efforts of AECL management to inform and shape the programs, decisions and actions of others, including its many stakeholders. The S&T priorities provide both a focus for the work AECL undertakes, and help AECL influence and contribute to many customer and stakeholder decisions within the larger public good.

Over the 2013 to 2015 timeframe, the S&T priorities will undergo further validation with Federal Government clients, including: Natural Resources Canada, the Canadian Nuclear Safety Commission, Environment Canada, Health Canada, National Defence, Department of Foreign Affairs and International Trade, and Public Safety Canada. Based on these interactions, adjustments to the S&T priorities will be made, as required.

Table 3: AECL S&T Priorities

AECL S&T Priorities	Description
Understand, and address public perceptions of, the effects of radiation	Through science and dialogue with the public, present the facts on the effects of radiation on living things.
Enable CANDU technology as a key contributor to Canada's energy portfolio	Work with CANDU owners, Candu Energy Inc. and the entire CANDU eco-system to improve CANDU's safety, economic performance, and fuel flexibility and ensure CANDU remains an attractive option both domestically and internationally.

AECL S&T Priorities	Description
Understand, prevent and mitigate risks associated with nuclear operations and activities	Ensure that nuclear activities in Canada are carried out safely, and that capability exists to assess, mitigate and respond to nuclear incidents.
Advance the knowledge base for informed standards and regulation	Using Canada's unique nuclear facilities and expertise, provide the basis for the development and application of scientifically-based regulations, standards and policies related to nuclear and radiological issues that support and advise national and international organizations and initiatives.
Enhance national and global nuclear security	With government and industry as partners, develop detection technologies and response capabilities associated with illicit production, use and transportation of nuclear materials in support of non-proliferation, safeguards and counter-terrorism.
Secure options for future energy needs and sustainability through nuclear technology	Promote regional development opportunities for nuclear (e.g., energy for the North, oil sands development) and other energy technologies that are synergistic with nuclear (e.g., hydrogen, fusion). Also, leverage advanced materials development for nuclear applications.
Develop and demonstrate the minimal impact of nuclear technologies on the environment	Through science and public engagement, generate understanding of the behaviour and impact of radioactivity in the environment and develop and implement solutions that reduce life-cycle environmental impacts of nuclear technologies through materials selection, design and waste management initiatives.

5.3 Management Area Expectations

The newly established Management System Framework (Section 3.4.3) will continue to mature over the planning period. Key expectations for each area have been established by each Management Area Champion in consultation with the Executive Team and with guidance from the CEO. The expectations are:

- **Alignment and Integration Management:**
  - Respect nuclear safety
  - Live within our means
  - Sustain value
  - Be ready for transition
  - Adjust customer-supplier arrangements
- **Program Activity Management:**
  - Deliver upon our commitments
  - Be Government's primary nuclear S&T supplier
  - Be agile in responding to business opportunities

- **HSSE Management:**
  - Maintain a nuclear safety focus
  - Ensure employee safety and well being
  - As leaders, commit to safety
  - Deliver on HSSE improvements
- **People Management:**
  - Have a respectful workplace
  - Develop our leaders
  - Have a fully trained and qualified workforce
- **Capability Management:**
  - Be recognized for our Centres of Excellence
  - Have best-in-class S&T facilities
  - Develop highly qualified people
  - Anticipate the needs of our customers
- **Improvement Management:**
  - Have a best-in-class management system
  - Focus on strategic improvement
  - Implement sustainable change

The ensuing activities to deliver on these expectations will be documented in Management Area Plans, and be given executive level oversight (as described in Section 3.4.3).

The highest priority and overarching expectation across all areas of the Management System Framework is nuclear safety – namely, the respect given to the unique risks posed by a nuclear reactor and nuclear materials.

Two key management area expectations that necessitate further focus over the planning period are strategic improvements and Centres of Excellence because they affect strategic change and require cross-organizational engagement in the planning process,

5.3.1 Improvement Management – Focus on Strategic Improvements

The expectation of Strategic Improvements focuses on continuing with the remaining improvement initiatives that had been established in last year's Corporate Plan to position the company to deliver on its value proposition. These initiatives warrant specific attention because they had been established in response to common opportunities and challenges that had been identified after a thorough review of all AECL's Program Activities and Sub-Activities, performed in 2011. The initiatives are:

- Enhance program governance
- Enhance productivity

- Stimulate business innovation
- Leverage collaborations

AECL has made progress on these strategic improvements and will continue over the planning period, as described below.

Enhance Program Governance: The effectiveness of many of AECL's PAs will be improved by directly involving appropriate stakeholders from Government, industry and academia in PA governance. This will help set the direction of each PA and optimize their value. Performance information, audits, evaluations and stakeholder feedback will be used to assess and determine overall effectiveness. These enhancements in program governance will help ensure that the Nuclear Laboratories continues to strengthen the delivery of its value proposition.

Enhance Productivity: Since the Enhance Productivity initiative was introduced in 2011-2012, AECL has made significant gains in realizing sustainable efficiencies and effectiveness at all stages of program delivery, including planning, execution and exploitation. This initiative will continue to establish additional on-going, sustainable productivity improvements while achieving AECL's safety, security and regulatory commitments. Training will be provided to employees to develop skills in Lean Management/Continuous Improvement that are tied to practical applications. By having an engaged and aware workforce and an institutionalized culture of continuous improvement, AECL will benefit from significant cost saving in future years.

Examples of planned improvement activities for 2013-14 are: optimizing resource planning and resourcing strategy; improving effectiveness and efficiency of work planning and management; developing an engaged, aligned and productive workforce; removing non value-added activities from current waste processing; and, applying lean methodologies to AECL's Corrective Action Program.

The efficiency gains generated by this initiative contribute to AECL's goal to abide by the spirit and intent of the Government's Deficit Reduction Action Plan.

Stimulate Business Innovation: Stimulating business innovation is a priority in the Government of Canada's *Economic Action Plan 2012* and a key element of AECL's value proposition. The intent of this strategic initiative is to stimulate business in the private sector and increase AECL revenues to offset its dependence on Government of Canada funding. To achieve this, AECL is challenging its suppliers to be more innovative by developing products and services for AECL that may also be commercially exploited elsewhere. AECL is also transferring its S&T innovations into the private sector for their commercial exploitation.

Leverage Collaborations: Much of the work undertaken within AECL's six output PAs will be performed in collaboration with industry, academia and other government

departments. These collaborations enable third-party partners to grow their business through co-development and exploitation of innovative technology; provide university students with unique access to AECL facilities to grow their knowledge in fields that will support the nuclear industry; and encourage collaborators to co-fund S&T activities that will help reduce the Nuclear Laboratories' federal funding requirement.

This initiative focuses on encouraging university professors, researchers and other collaborating partners to increase their utilization of AECL's S&T facilities for their research projects and increasing the total number and value of collaborations associated with AECL's S&T activities.

5.3.2 Capability Management – Centres of Excellence

"Be recognized for our Centres of Excellence" is one of four expectations under the Capability - Management Area. This expectation is outlined in this Plan because it introduces a new concept for planning AECL's S&T capabilities.

In order to sustain its ability to progress the S&T Priorities (Section 5.2), AECL will further develop its strategic capabilities over the planning period. These capabilities include the people, tools and technologies that will enable AECL to: (i) execute current and future Program Activities; (ii) contribute to Canada's nuclear S&T industry network; (iii) position AECL to address the current and emerging needs of other federal departments and agencies; and (iv) give AECL the basis for competitive advantage in the market. In addition to developing its internal core capabilities, AECL will actively engage with its supply chain and partners to develop external, third-party capabilities.

During the period of this Plan, a Capability Management Plan that addresses expertise, intellectual property (IP), collaborations, supply chain and S&T facilities will be developed for AECL.

Table 4: AECL Centres of Excellence

1. Nuclear and radioactive material management
2. Irradiation and post-irradiation services
3. Nuclear safety, security, and risk management
4. Radiation biology, radioecology and dosimetry
5. Materials and chemistry in nuclear applications
6. Advanced nuclear fuels and fuel cycles
7. Systems engineering
8. Advanced computing, modelling and simulation
9. Hydrogen and hydrogen isotopes management
10. Environmental remediation and nuclear waste management

Further development of these capabilities will be coordinated through the creation of ten AECL Centres of Excellence (COE). These COE's, although not resourced organizations, are specific capability areas that make AECL unique in the nuclear industry. For each of the areas, a COE Lead, with demonstrated technical knowledge and leadership abilities in the area, has been appointed to develop a strategic approach towards ensuring that the various components of the COE (e.g., expertise, S&T facilities, IP etc.) are addressed to meet the current and future

aspirational needs of AECL and others. The COE will complement AECL's PAA by providing specific focus on the capabilities needed to address the needs of one or more Program Activities. When fully developed through the course of 2013-2014, each COE will have plans that are aspirational in nature, that anticipate the needs of Government, industry, learning institutions, and the public as a whole and that will help focus and sustain AECL's capabilities accordingly. The plans will address the development of cross-cutting capabilities across all of the COE's. COE Leads will ensure that the execution of these capability plans are integrated into relevant PA Plans where they will be resourced and executed. AECL's new Management System Framework (Section 3.4.3) will provide oversight, planning, assessment, execution and expectations for maturing the COEs as a whole.

6 PROGRAM ACTIVITIES

As outlined in Section 3.3, AECL achieves its strategic outcomes through six outcome Program Activities (PAs) delivering results to Government and third-party customers that are enabled by two supporting PAs (see Table 2). Each PA has a three-year rolling plan that describes how an expected result will be achieved through program content that is divided into a series of sub-activities containing projects. The following section outlines each PA in more detail, including a short summary of some significant achievements made in 2012-2013 (as of December 31, 2012). The primary focus however is on the objectives for the next three years that respond to the direction described in Section 5.

With this Corporate Plan, AECL is laying the foundation for a medium-to-longer-term repositioning of our customer-supplier relationships with Government and with third-parties, by which AECL will ensure the financial viability of the company going forward, consistent with Government of Canada restructuring direction.

The forecast expenditures captured in the tables for each Program Activity anticipate the needs of AECL's Government and private sector customers, while also being responsive to the spirit and intent of Government of Canada's Deficit Reduction Action Plan, and the restructuring direction. Over the course of the five year planning period, these projections will see a substantial rebalancing of the financing of its customer facing work, particularly of its S&T activities, from Government to third-party customers, while sustaining the overall scope of activities.

This rebalancing will result in a reduction in government funding of AECL operating expenses by 22 percent (approximately 34 percent adjusted for cost escalation) compared to 2011-2012 (see Table 14).

Future releases of the AECL Corporate Plan will reflect customer pricing for external-facing work in the six output PAs in line with the value provided. This pricing must generate the margins necessary to sustain the business into the future and be seen as reasonable and competitive in the market by our customers. As part of the transition to this new approach, the financial tables for the six output PAs include an attribution of costs from PA 1.7 (excluding certain capital requirements), PA 1.8 and the components of PA 1.2 which do not have an outward focus. The attribution was based on a model that was developed in consultation with outside consultants and included a detailed analysis of key cost drivers.

AECL will have adjusted the management and funding of its S&T activities from today's situation where the Government is the customer for about 75 percent of our S&T activities across all PAs, to a situation where, funding from third-party S&T customers approaches that of the Government. AECL's focus will be on growing our third-party customer revenues to achieve this shift. By the end of the plan period it is

projected that Government as customer for S&T activities will represent 60 percent of total S&T activities.

AECL will continue its initiative to enhance productivity through continuous business improvement and to ensure the financial viability of the company while meeting AECL's goal to abide by the spirit and intent of the Government's Deficit Reduction Action Plan. Starting with this Corporate Plan, AECL has begun the integration of productivity improvement planning into business planning, enabling the organization to assess activities, to identify opportunities for productivity improvement early in the planning cycle, and to incorporate required actions into PA Plans. Many of these opportunities will have savings that are carried forward to future years. These will ensure that AECL will continue to live within its means and to deliver on its commitments as part of the Nuclear Laboratories value proposition. Going forward, training will be provided to employees to develop skills in Lean Management/Continuous Improvement that are tied to practical applications. By having an engaged and aware workforce and an institutionalized culture of continuous improvement, AECL will benefit from significant cost saving in future years.

The financial tables for the six output PA's include a value for in-kind collaborations. AECL collaborates with partners in pursuit of its S&T priorities. Collaborations bring resources together synergistically toward a project. The contribution of non-cash resources from a collaborator is measured as an "in-kind" contribution. The value of an in-kind contribution is estimated according to the guidelines of granting agencies. As such, in-kind contributions are a valuable method of leveraging AECL resources to gain a higher return on investment, create partnerships in the S&T community, and advance AECL's S&T priorities.

6.1 Program Activity 1.1: Nuclear Industry Capability

Expected Result: The Canadian nuclear sector remains safe and productive with access to S&T resources to address emergent technological challenges. Canada is ensured a strong nuclear power sector.

PA 1.1 is AECL's face to the Canadian nuclear industry and spending in PA 1.1 is primarily third-party funded. The activities underway in this PA ensure a strong connection will continue between AECL and the nuclear industry, thus allowing AECL to be an enabler of business innovation and technology transfer, as embedded in its value proposition. Most activities in PA 1.1 represent a significant source of revenue and provide the basis for a considerable amount of the collaborative work that is currently underway. Both of these trends are expected to continue in future years.

The work underway through this PA provides industry access to the AECL experts, facilities and technologies they require to be successful in the marketplace and to seize domestic and global opportunities. This model aligns well with a recent Government-commissioned report that describes how Government laboratories should partner with the private sector to enable innovation.

PA 1.1 is comprised of the following sub-activities:

- **Candu Energy & Other Industry Support** principally captures the business undertaken with Candu Energy Inc. and the Canadian utilities.
  Candu Energy Inc. is a wholly-owned subsidiary of SNC Lavalin and was created as a result of Phase 1 of AECL restructuring. AECL is a strategic supplier to Candu Energy as it undertakes major nuclear-related projects, provides services to utilities, and seeks new business opportunities throughout the world. AECL support provided through this program is invoiced to industry clients through a commercial proposal process.
  This sub-activity also captures the value-added services provided directly to utilities that safely supply nuclear-generated electricity to Canadians. As an example, some current projects will help the Utilities to demonstrate that they can operate their plants longer before refurbishment is required.
- **CANDU Owners Group Support** for the private, not-for-profit organization dedicated to providing programs for cooperation, mutual assistance and exchange of information for the successful support, development, operation, maintenance and economics of CANDU-based reactor technology. As a member, AECL contributes financial resources to support COG programs benefiting all of its members, while as a supplier, AECL provides services to COG under fully commercial terms. COG membership and participation in the COG R&D program provides important information to AECL that enables the safe and compliant

operation of its many licensed nuclear facilities. In addition, COG programs generate S&T that provides value and benefit to the Government of Canada.

- **Technology Development for the CANDU Industry** provides support for the development of new technologies that will enhance the safety and economic performance of CANDU reactors. This work may result in technologies that lead to new revenue streams for AECL and maintains a strong and vibrant Canadian nuclear industry.

- **Heavy Water Management** captures the business undertaken by AECL in Canadian and international heavy water markets, including the sale and leasing of portions of AECL's heavy water inventory to both reactor and non-reactor clients. This sub-activity also includes the cost for storage and management of heavy water inventory at AECL's Laprade site.

PA 1.1 Achievements in 2012-2013

Initiatives undertaken in Fiscal Year 2012-2013 were related to improving the project management and delivery of Candu Energy Inc. and COG-funded work. Significant achievements included the following:

- Demonstrated proof-of-concept on select EC6 reactor safety systems and provided data to support safety and licensing analyses.

- Demonstrated that the lifetime of the fuel channels in the operating reactors at the Pickering Nuclear Generating Station can be extended to 2020.

- Introduced a selection of new AECL technologies that are available for commercialization through the Organization of CANDU Industries (OCI).

- With a collaborator, installed AECL's proprietary catalyst technology for heavy water production in an industrial chlorate plant.

- Demonstrated the feasibility of a unique one-of-a-kind tool, the Modal Detection and Repositioning tool developed at AECL that can detect and reposition spacers in a reactor fuel channel during an outage. There is no other tool available to detect and reposition these particle spacers; repositioning of these spacers is required for continued operation of the reactor.

PA 1.1 Objectives for 2013-2016

PA 1.1 will continue to provide the Canadian nuclear industry with the expertise needed to address high risk technology development issues. Key objectives over the next two to three years include:

- Complete research activities relating to the EC6 reactor development program, as required by Candu Energy Inc.
- Complete the COG Fuel Channel Life Management Joint Project to improve end-of-life criteria which will aid in determining the available life expectancy in CANDU pressure tubes.
- Expand product and service offerings, and the customer base. This will be achieved by reviewing and acting upon emerging opportunities for commercialization of AECL technologies.

PA 1.1 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.1 are:

- Grow royalty revenues from technology commercialization within nuclear and non-nuclear industry supply chains.
- Sustain or grow third-party revenues through S&T services to industry and through AECL heavy water asset sales.
- Apply margins for both re-investment in forward-looking research and technology development in other PA's and toward financing company overheads.
- Continue to grow third-party collaborations.

Table 5: Program Activity 1.1 Financial Projection

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Direct Expenditures*	34	42	39	41	37	37	38	192
Attributed overheads (PA1.7 & 1.8)		28	28	26	27	27	27	136
Collaborations (In-Kind)**		70	70	72	*To be presented in future Corporate Plans*			
FTEs***		211	209	219	*To be presented in future Corporate Plans*			

** Includes NRU facility allocation*
*** Contribution of non-cash resources from collaborators accuracy +/- 10%*
**** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.2 Program Activity 1.2: Nuclear Safety and Security

Expected Result: Federal activities, regulations and policies related to nuclear or radiological issues are supported by the necessary expertise and facilities.

As the centre of federal expertise on nuclear and radiological issues, AECL maintains the safety and security of several federal nuclear sites, develops technology that is used to assure Canada's nuclear safety and security, provides nuclear crisis/emergency response operational and advisory capabilities and provides advice to other government departments and international nuclear bodies.

PA 1.2 provides fire, security, radiation safety and nuclear material transportation services to ensure the safety and security of AECL's licensed sites across Canada and to respond to crises domestically and internationally. It also develops technologies to lead and assist international efforts in non-proliferation of nuclear weapons and materials, and provides the technical basis for the safe operation of nuclear facilities and reactors in Canada, including tools to support regulatory risk assessment and emergency response to nuclear incidents.

This PA also develops expertise used to represent Canada in international forums on nuclear safety and radiological issues, and to advise and support the private and public sector on topics ranging from safe regulation of facilities, to methods for detection of nuclear materials.

PA 1.2 is comprised of the following sub-activities:

- **Nuclear Non-Proliferation and Counterterrorism** supports collaborations with Canadian government agencies, the private sector and international organizations to reduce the threat of nuclear proliferation by providing innovation to prevent and detect illegal transport of nuclear materials. It also ensures that AECL's nuclear sites present no threat to nuclear safety.

- **Nuclear Response** ensures that appropriate resources are in place to prepare, respond to and mitigate emergency events (including fire) and provides technical support as required to other nuclear sites and local, regional, provincial and national communities.

- **Nuclear Materials Handling** ensures that nuclear materials are managed and transported safely, at no risk to nuclear workers or the Canadian public.

- **Nuclear Safety Technology** develops methods to enable the safe execution of nuclear activities in Canada based on sound scientific knowledge and ensures that the regulator has access to this knowledge. It provides data, tools and

measurements to support the safe regulation of nuclear facilities, and to validate and develop codes needed to perform nuclear safety analysis and define safety margins.

PA 1.2 Achievements in 2012-2013

- AECL completed five joint emergency training exercises, covering a variety of scenarios with all levels of government.
- AECL and the CNSC jointly hosted a nuclear safety technology seminar series.
- AECL held a non-proliferation and counterterrorism workshop for stakeholders within various government departments and agencies.

PA 1.2 Objectives for 2013-2016

PA 1.2 will continue its efforts to deliver technologies, methodologies and initiatives to promote a safe and secure Canada. Key objectives for the next two to three years include:

- Demonstrate new technologies/methodologies to aid in detection and attribution of illicit nuclear materials, consistent with international nuclear safeguards policy objectives.
- Develop and release prototype "advanced safety analysis code" for education and evaluation purposes.

In response to events at Fukushima, this Program Activity has reallocated resources to improve understanding of, and response to, severe accidents. These include:

- Complete investigations to improve the understanding and mitigate the consequences of containment pressurization and enhanced fission product releases during loss of power events.
- Enhance emergency preparedness and response capabilities for AECL and surrounding areas through improved collaboration between regional, provincial and federal agencies, and by sharing improvement ideas with the national and international emergency management communities.

PA 1.2 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.2 are:

- Improve Government as customer relationship for nuclear safety and security S&T, and national security and crisis response operations.

- Cost escalation for government funded work absorbed through productivity improvements.
- Continue to grow third-party collaborations.

Table 6: Program Activity 1.2 Financial Projection

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Direct Expenditures	67	58	58	58	58	58	58	288
Attributed overheads (PA1.7 & 1.8)		34	33	32	32	33	33	163
Collaborations (In-Kind)*		12	15	18	*To be presented in future Corporate Plans*			
FTEs**		430	438	438	*To be presented in future Corporate Plans*			

** Contribution of non-cash resources from collaborators accuracy +/- 10%*
*** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.3 Program Activity 1.3: Clean, Safe Energy

Expected Result: The development of energy technologies that make a beneficial impact on Canada's use of clean energy.

AECL, with its collaborators, develops, assesses and facilitates the commercialization of innovative technologies to allow for increased energy generation, enhanced safety and efficiencies, and reduced greenhouse gas creation and dependence on fossil fuels.

PA 1.3 builds upon existing investments in nuclear energy technologies required to ensure that nuclear-related energy systems are safe. This is achieved by developing the systems, materials and infrastructures required for: the next generation of nuclear reactors (Generation IV); Canada to be a key partner in the development of closed cycle (non-proliferation) nuclear fuel cycles; the application of hydrogen technologies to energy production and industrial applications; and to ensure that Canadians stay abreast of, and benefit from, developments in fusion energy and small reactor technologies.

PA 1.3 is comprised of the following sub-activities:

- **Generation IV Technologies** supports and fulfills Canada's commitment to the Generation IV International Forum, with the goal of developing the design concept for a pressure tube supercritical water-cooled reactor (SCWR), a more efficient design than current Generation II and III reactors.

- **Tritium and Fusion Technologies** maintains Canada's credibility, presence and expertise in the management and application of tritium technology, including its application by the international fusion community. AECL's tritium technology, developed for the safe management of tritium in nuclear fission plants, ensures Canada is well-positioned to apply this capability to other industrial applications.

- **Hydrogen Technologies** utilizes AECL's expertise in heavy water and hydrogen technology and its patented wet-proofed catalyst technology for applications to electrolysis (electrolytic cells) and fuel cells. It also provides the foundation for the production and application of hydrogen as an energy source and industrial feedstock.

- **Sustainable Energy Technologies** focuses on advanced inspection technologies to ensure the safe operation of nuclear energy systems, and on the development of advanced nuclear fuels and fuel cycles for improved resource utilization, performance and proliferation resistance.

- **Materials Science and Chemistry** develops innovative applications of nuclear materials and chemistry technologies for industrial applications, and supports the development and operation of advanced energy systems through the application

of advanced materials and chemistry required to retain structural integrity at high temperatures and over long operation times.

- **Small Reactors** ensures the sustained operation of Canada's fleet of university-based small reactors, and advances small reactor technology as an alternative source of power for remote Canadian communities so that it is safer, cleaner and more cost-effective than diesel.

PA 1.3 Achievements in 2012-2013

- Under the US-Canada Security and Prosperity Partnership, and the Global Threat Reduction Initiative, AECL and the US Department of Energy have established a collaboration to convert the SLOWPOKE reactor, located in Jamaica, from operating on fuel from highly enriched uranium to low enriched uranium.

- With industrial, CNSC and Department of National Defence sponsorship, AECL hosted a workshop on the development, regulation and application of small reactor technologies for Canada to establish the framework for Canadian exploitation of small reactors. In addition, a collaboration was initiated with the University of Saskatchewan and the Canadian Centre for Nuclear Innovation to investigate small reactor applications for isolated locations.

- With the Institute for Nuclear Safety and Security (INSS, Japan), developed a series of modified metal alloys (Alloy 800) used in the nuclear and high energy systems, to improve resistance to stress corrosion cracking resulting from cold work, irradiation and stress in corrosive environments. Initial results show that small increases in the content of Chromium in the metal alloy have significant positive benefits.

- AECL's 50 year experience with thorium fuels for reactors was summarized in a comprehensive report. This forms the basis for further development and investigation. In addition, AECL commenced a collaboration with the Nuclear Power Institute of China (NPIC) on the use of thorium in CANDU reactors, in support of the strategy to market thorium-burning CANDU reactors in China.

- AECL has fulfilled Canada's commitments to the Generation IV International Forum (GIF) for 2012-2013. In addition, AECL has developed a concept for a small reactor version of the Super-Critical Water Reactor (SCWR) that is Canada's contribution to the GIF, and has submitted patent applications for the SCWR design concept and fuel assembly.

- With an industrial partner developed and tested a tritium-compatible membrane-type electrolyser that has applications for future detritiation technologies. This is

a significant achievement because this will facilitate commercial exploitation of AECL's detritiation technologies.

- AECL demonstrated, and submitted a patent application for, a unique electrochemical cell with potential applications for low cost preparation of products enriched in specific hydrogen isotopes, such as heavy water.

PA 1.3 Objectives for 2013-2016

- Complete the development of the Canadian Gen-IV nuclear reactor concept meeting the technology goals of the Generation-IV International Forum by 2016 March.

- Submit thermalhydraulics, safety and reactor chemistry reports annually in fulfillment of Canada's GIF obligations, while providing supervision of Generation IV university activities on behalf of the Natural Resources Canada Gen IV Portfolio Committee.

- With an industrial partner, design and build a commercial-scale tritium-compatible electrolyser for detritiation applications. Validate tritium compatibility through experimental work in AECL's tritium facility.

- Develop advanced electrolysers for large-scale hydrogen production and catalysts for fuel cells and next-generation passive recombiners to address hydrogen safety in hydrogen economy and nuclear applications, including Fukushima-related safety issues.

- Demonstrate innovative inspection technology to ensure the safety of nuclear power plants and other high-energy systems over extended plant life-times (up to 80 years).

- Develop and demonstrate advanced techniques for characterizing nuclear materials and components to better predict behaviour under a variety of operating conditions. Also, establish a better understanding of the effects of neutron irradiation on the behaviour of nuclear components.

PA 1.3 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.3 are:

- Improve Government as customer relationship for clean, safe energy S&T.

- Cost escalation for government funded work absorbed through productivity improvements.

- Continue to grow third-party collaborations.

Table 7: Program Activity 1.3 Financial Projection

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Direct Expenditures*	19	28	27	28	26	27	27	135
Attributed overheads (PA1.7 & 1.8)		11	11	10	11	11	11	53
Collaborations (In-Kind)**		15	17	20	*To be presented in future Corporate Plans*			
FTEs***		156	156	156	*To be presented in future Corporate Plans*			

** Includes NRU facility allocation*
*** Contribution of non-cash resources from collaborators accuracy +/- 10%*
**** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.4 Program Activity 1.4: Health, Isotopes and Radiation

Expected Result: Canadians experience health benefits from nuclear science and technology.

Nuclear medicine was pioneered by AECL in the mid-20th century and now reaches across the healthcare system in many forms. As a relatively young area of nuclear S&T, there is significant opportunity for new innovation to improve the quality of life for Canadians.

PA 1.4 provides a reliable supply of medical isotopes to Canada and the international community for diagnostic applications and cancer treatments. It also focuses on increasing knowledge on the effects of radiation to humans, which includes the evolving techniques and expertise required for ensuring a safe work environment for workers at nuclear installations.

PA 1.4 is comprised of the following sub-activities:

- **Isotope Production** produces the medical isotopes that are eventually transported to hospitals around the world. Two Canadian companies integral to the world-wide isotope market are enabled by this activity.

- **Isotope Supply Reliability** is a broad, multi-year portfolio of work that provides hardware and process improvements within AECL's facilities that make up the isotope-production stream. Making such improvements to the NRU reactor is an essential aspect of maintaining the Chalk River operating licence.

- **Isotope Legacy Obligations** manages isotope legacy obligations related to isotope production, including the ongoing monitoring and maintenance of the Dedicated Isotope Facilities (DIF).

- **Radiation Biology and Health** seeks to reduce the probability of radiation-induced health effects (including cancer) by improving monitoring and biodosimetry services for nuclear workers. These same services are available to be used more broadly in the event of a nuclear emergency domestically or internationally. The studies of the effects of radiation on human health, which are conducted in collaboration with universities and other research institutions, are required to inform regulation on the safe levels of radiation exposure.

PA 1.4 Achievements in 2012-2013

- AECL met its targets for providing isotopes to market.

- AECL successfully completed the planned annual 30-day extended maintenance outage of the NRU reactor.

- The second NRU vessel Fitness for Service Assessment Report was issued, declaring that the NRU vessel is fit for service for an addition evaluation period of one year.

- AECL successfully exchanged tritiated light water with fresh water in the NRU rod bay.

- The first Integrated Implementation Plan (IIP) Annual Progress Report was issued to the CNSC as per the Site Licence Conditions Handbook.

- In partnership with Health Canada, AECL developed methods to reduce the time required for the analysis, identification and treatment for exposure to select radionuclides.

PA 1.4 Objectives for 2013-2016

- Introduce new methodologies to substantially reduce contamination events and emissions that result from the production of medical isotopes.

- Implement plans to end AECL's production of Mo-99.

- Continue to deliver on commitments in the Integrated Implementation Plan, including lessons-learned from Fukushima.

- Release updated software for calculating radiation doses following intakes of radionuclides.

- Perform studies to determine how low-dose radiation affects cancer and non-cancer diseases.

- Operate neutron irradiation facilities with new calibration methods. This will establish AECL as Canada's principal centre for calibrating neutron instrumentation.

- Continue research with Canadian and international organizations, with emphasis on partnerships that exploit AECL's unique capabilities to undertake biological research with radionuclides in animals.

- Initiate a new program to understand the perceived risks of irradiation and nuclear technologies within the Canadian general population. A special focus will be placed on the views of aboriginal populations in northern Canada.

- Partner with universities to undertake studies to demonstrate the feasibility and utility of targeted alpha-radiotherapy for the treatment of cancer.

- Partner with US laboratories, the US Food and Drug Administration and Health Canada to participate in the testing of new oral drugs that can be used to remove radionuclides from the body.

PA 1.4 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.4 are:

- Improve Government as customer relationship for radiological health and dosimetry S&T.
- Provide for planned exit from NRU Mo-99 mission by 2016.
- Introduce a funding stream for a further five-year Integrated Implementation Plan Phase II in 2016-2017.
- Cost escalation for government funded work absorbed through productivity improvements.
- Continue to grow third-party collaborations.

Table 8: Program Activity 1.4 Financial Projection

$ Millions	Actual	Budget	Plan					5 Year
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
Direct Expenditures*	125	127	100	82	72	67	68	389
Attributed overheads (PA1.7 & 1.8)		56	55	52	54	54	54	269
Collaborations (In-Kind)**		2	3	4	*To be presented in future Corporate Plans*			
FTEs***		454	394	364	*To be presented in future Corporate Plans*			

** Includes NRU facility allocation*
*** Contribution of non-cash resources from collaborators accuracy +/- 10%*
**** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.5 Program Activity 1.5: Nuclear Environmental Stewardship

Expected Result: Federal nuclear sites are clean and healthy environments.

To secure the social licence for the continued utilization of nuclear energy, the nuclear sector and the federal government must demonstrate responsible environmental stewardship.

AECL will have ramped up the waste and decommissioning effort for effective and efficient elimination of nuclear liabilities, in line with NLLP renewal.

PA 1.5 addresses the Government's commitment to a clean and healthy environment for Canadians by: ensuring Canada's federal nuclear sites, including legacy and historic sites, are clean and healthy environments, demonstrating the responsible deployment of nuclear S&T; managing environmental risks, demonstrating sound environmental stewardship; and providing technologies, expertise and facilities in support of the safe storage and long-term management of radioactive waste in Canada. PA 1.5 also includes a number of environmentally-focused programs that AECL implements on behalf of Natural Resources Canada under its Radioactive Waste Management Program (NRCan's Sub-Activity 2.2.4 under the PA Ecosystem Risk Management).

PA 1.5 is comprised of the following sub-activities:

- **AECL Nuclear Legacy Liabilities** executes the Nuclear Legacy Liabilities Program (NLLP) that is designed to safely and cost-effectively reduce legacy liabilities and associated risks at AECL sites (CRL and off-site locations), based on sound waste management and environmental principles, in the best interests of Canadians.

- **Whiteshell Decommissioning** executes the NLLP-funded program to fully decommission AECL's Whiteshell Laboratories (WL) located in Pinawa, Manitoba, including decommissioning of the Underground Research Laboratory (URL).

- **Port Hope Area Initiative (PHAI)** executes the program to clean up historic low-level radioactive waste situated in the municipalities of Port Hope and Clarington arising from the historic operations of the former Crown Corporation Eldorado Nuclear Limited, and its private sector predecessors.

- **Historic Wastes** operates the Low-Level Radioactive Waste Management Office (LLRWMO) to address and manage historic low-level waste at sites in Canada.

- **Environmental Technologies** conducts environmental research activities for scientific, technical and compliance purposes that secure and demonstrate the environmental benefits of nuclear technology.

- **Nuclear Waste Services** seeks the application of innovative waste technologies for clients and stakeholders, and provides a national radioactive waste service to laboratories and small users.

- **Environmental Management** provides environmental protection, waste management and decommissioning management systems, processes and services.

PA 1.5 Achievements in 2012-2013

- Twenty five NLLP milestone commitments were completed. Three milestones related to environmental remediation activities, demonstrating AECL's commitment to ensuring its sites are clean and healthy environments. Eleven milestones related to AECL's redundant infrastructure at Chalk River Laboratories, Whiteshell Laboratories and prototype reactor sites and another eleven milestones will support improved waste management.

- Initiated Construction and Remediation Phase 2 of the Port Hope and Port Granby Projects under the PHAI and completed the process to enable the CNSC-regulated aspects of the Port Hope Project to be carried out through 2022.

- Supported Canada's role in the Global Partnership Program and commitments made at the 2010 and 2012 Nuclear Security Summits by advancing projects to repatriate Canada's highly enriched uranium (HEU)/fissile inventory.

- Demonstrated AECL's commitment to improvements in environmental stewardship through participation in an industry-sponsored benchmarking study and the successful completion of external audits.

PA 1.5 Objectives for 2013-2016

- The NLLP will continue to safely and cost-effectively reduce nuclear legacy liabilities and associated risks through: its enabling facilities, such as the Fuel Packaging and Storage facility; completion of design requirements for a cementation system to immobilize legacy radioactive liquids; remediation of high-risk historic tank wastes; the acceleration of the decommissioning of legacy buildings that supported fuel reprocessing activities in the early 1950s; and the reconfiguration of site utilities at the Whiteshell Laboratories to help reduce operating costs.

- Proceed with HEU repatriation projects through the shipment of fissile solution and partial return of historic NRX and NRU fuel, reducing liabilities and supporting Canada's international commitments on nuclear security.

- Advance the objectives of Construction and Remediation Phase 2 for the Port Hope and Port Granby projects.

- Complete radiological survey and remediation planning for all small-scale sites (including residential properties) on the Port Hope Project and secure federal approval to initiate the remedial actions for these sites.

- Achieve reduced costs for waste storage through improved characterization methodologies and appropriate waste storage facilities for very low-level waste produced from site operations and decommissioning activities.

- Improve management of environmental site data by deploying state-of-the-art data management tools and technology to more readily provide information to all stakeholders, including the public.

PA 1.5 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.5 are:

- Grow and then sustain the NLLP annual budget to approximately $180 million per year; the annual budget for 2014-2015 and beyond will be confirmed with the renewal of the NLLP in 2013-2014.

- Align budgets for the PHAI Management Office and the LLRWMO to approvals received from Natural Resources Canada.

- Cost escalation included as part of the decommissioning liability and provided within the funding.

- Maintain pricing strategies consistent with the pricing principles of full cost recovery.

- No change in the current pricing model for Government of Canada funded programs is assumed for this planning period.

- Enhance Government as customer relationship for all nuclear environmental stewardship S&T services.

- Continue to grow third-party collaborations.

Table 9: Program Activity 1.5 Financial Projection

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Direct Expenditures	141	160	198	205	205	209	209	1,025
Attributed overheads (PA1.7 & 1.8)		52	49	48	49	49	49	243
Collaborations (In-Kind)*		1	1	2	*To be presented in future Corporate Plans*			
FTEs**		837	875	875	*To be presented in future Corporate Plans*			

** Contribution of non-cash resources from collaborators accuracy +/- 10%*
*** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.6 Program Activity 1.6: Nuclear Innovation Networks

Expected Result: Canadian science and technology communities advance their innovation agendas through access to federal nuclear innovation infrastructure and expertise.

AECL maintains a suite of critical national science facilities that support the diverse innovation needs of Canada's nuclear and radiation S&T community, which comprises industries, universities, research hospitals, and government laboratories including AECL sites.

PA 1.6 connects AECL capabilities to members of this community to enable them to pursue a spectrum of scientific goals, including clean energy, cancer research and nuclear security. It also provides a mechanism for increasing the return on investments that have been made in the scientific facilities, programs and personnel at AECL, and a mechanism to enable AECL to access alternative funding streams, thereby leading to a reduced requirement for direct federal funding for AECL projects.

This PA promotes partnerships and collaborations aligned with AECL's S&T priorities. Across all of the PA's, it is estimated that AECL leverages $100 million in collaborative effort, including commitments from industry, academia and international partners.

PA 1.6 is comprised of the following sub-activities:

- **Canadian Neutron Beam Centre (CNBC)** enables AECL, supported by the National Research Council, to operate the CNBC at AECL's Chalk River Laboratories by providing supporting infrastructure and programs. The CNBC operates a user access program enabling more than 200 scientists, engineers, and students from universities, government laboratories, and industry to participate in research using the facility's six neutron beam lines. The CNBC is unique in Canada and provides Canadian scientists with the ability to research the molecular structure of materials as diverse as metals, minerals, plastics and bio-materials.

- **Nuclear Innovation Partnerships** actively builds awareness and enables access to AECL's unique expertise and capabilities (beyond the CNBC), and provides a mechanism for external stakeholders to engage in collaborative research opportunities with AECL.

- **Nuclear Workforce of the Future**, a new activity that began during 2011-2012, supports the development of Canada's highly qualified workforce through programs that provide training and experience to Canadians interested in entering the nuclear workforce.

PA 1.6 Achievements in 2012-2013

- Achieved more than ten percent growth in the value of S&T-leveraged collaborations at AECL compared to the previous year.
- An external call for proposals was launched that focused on advancing AECL's S&T priorities, utilizing its unique facilities and expertise, and promoting third-party engagement.
- AECL's new journal, the *AECL Nuclear Review*, was launched. The journal is a forum for the Canadian and international nuclear community to present innovative nuclear S&T-related papers.
- Increased participation in the ZED-2 reactor physics experimental school that contributes to the development of highly qualified people.

PA 1.6 Objectives for 2013-2016

The three sub-activities within this PA are at different stages of maturity, which is reflected in the expected progress each will make in 2013-2016.

- Increase the use of CNBC facilities by third-parties, in particular, private industry.
- Broaden communication activities to ensure that potential Canadian stakeholders who could benefit from access to AECL facilities are aware of collaboration opportunities and AECL's interest in leveraging these facilities for the public good.
- Continue to grow and mature partnership activities, enabled in part by an external call for proposals for third-party collaborations aligned with AECL's S&T priorities. As the volume of visiting scientists grows, the capacity for AECL to support and enable their work will grow in parallel through the implementation of a formal partnership process.
- Expand the externally-focused science seminar series with the intention of promoting collaborations, partnerships and learning opportunities.
- Transition the Nuclear Workforce of the Future program from conducting conceptual, exploratory activities to establishing specific educational partnerships with Canadian academic and vocational institutions.

PA 1.6 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.6 are:

- Manage and operate the Canadian Neutron Beam Centre (CNBC), with NRC staff seconded into AECL, commencing 2013-2014.
- Cost escalation for government funded work absorbed through productivity improvements.
- Continue to grow third-party collaborations.

Table 10: Program Activity 1.6 Financial Projection

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Direct Expenditures*	1	8	12	12	12	12	12	59
Attributed overheads (PA1.7 & 1.8)		1	1	1	1	1	1	6
Collaborations (In-Kind)**		4	4	6	*To be presented in future Corporate Plans*			
FTEs***		4	78	78	*To be presented in future Corporate Plans*			

** Includes NRU facility allocation*
*** Contribution of non-cash resources from collaborators accuracy +/- 10%*
**** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.7 Program Activity 1.7: Mission-Ready Science and Technology Infrastructure

Expected Result: Scientists and engineers from AECL and its partner organizations have access to licensed facilities and services that enable nuclear innovation and production in a safe campus environment that is fully compliant with all legislation for conducting nuclear-related activities.

PA 1.7 invests in people, plant and processes to achieve safe, reliable and efficient availability of AECL's S&T infrastructure, while assuring the health and safety of employees, the local community and the environment.

PA 1.7 is comprised of the following sub-activities:

- **NRU (National Research Universal) Reactor Readiness** ensures Canada's largest and most versatile research reactor is available and operated safely and compliantly in support of science and technology programs.
- **Nuclear Facilities Readiness** ensures all other AECL nuclear facilities and laboratories are safe, operational and accessible to conduct science and technology programs.
- **Nuclear Waste Management Readiness** provides integrated management of radioactive liquid and solid wastes resulting from execution of Program Activities.
- **Facility Development** represents a variety of services to support the success of the organization such as the provision of maintenance, management of facility engineering changes and implementation of management processes.
- **Provision of Real Property and Municipal Facilities** provides safe, reliable work environments through prudent management of real property assets, enabling all PAs to deliver their programs.
- **Infrastructure Revitalization** is a program of improvements to replace and upgrade aged infrastructure, thereby facilitating other programs to deliver their intended outputs.

PA 1.7 Achievements in 2012-2013

- AECL worked with the CNSC and WANO to understand the lessons-learned from the Fukushima event and developed action plans based on these lessons.
- The NRU reactor 30-day annual maintenance outage was successfully completed, including a full scope of vessel inspections.
- Improvements to NRU operations continue as a result of WANO's mid-cycle peer review. The review focuses on facility availability by improving equipment

reliability, reducing unplanned reactor trips and improving radiation protection practices by reducing contamination events.

- AECL addressed several regulatory requirements by successfully recertifying the ISO 9001 program and the TSSA Certification of Authorization for Chalk River's pressure boundary program.

PA 1.7 Objectives for 2013-2016

- Bring the NRU experimental loops online. This will provide AECL and external researchers with an additional facility to advance fuel- and materials-based S&T.
- Complete WANO Peer Review actions and improve the execution of planned shutdowns to enhance NRU reactor effectiveness.
- Complete the planned phases of the capital and operating infrastructure plan for projects such as Domestic Water System, Sanitary Sewage Treatment Facility, Class IV Electrical Upgrade, Storm Water Management, Shielded Modular Above Ground Storage, and Upgrades to the Shielded Facilities.
- Implement a modern life-cycle asset management program and improvements to, or the replacement of, radioactive liquids infrastructure, ensuring that the systems are both "fit for service" and "fit for purpose" as the CRL site mission evolves. These actions will reduce environmental risks related to radioactive liquid management systems.
- Reduce fire risk at Chalk River by continuing hazard analysis and remediation on a risk basis, including replacing laboratory fumehoods.
- Execute projects that will increase energy efficiency and convert a portion of the Chalk River building heating system to natural gas. This will reduce energy costs by $4 million a year and pollution by approximately 8,700 tonnes per year.
- Transform asset management, work planning, supporting processes and waste management in order to implement sustained productivity improvements.

The delivery of these objectives and the overall activities within PA 1.7 will have see further improvements in productivity and in efficiencies, the delivery thereby lowering the overall expenditures within this enabling PA.

PA 1.7 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.7 are:

- Cost escalation for government funded work absorbed through productivity improvements.
- Pursue innovative delivery of capital infrastructure projects to reduce capital investment requirements.

Table 11: Program Activity 1.7 Financial Projection

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Direct Expenditures	179	172	199	186	210	212	212	1,018
FTEs*		1,025	1,019	1,019	*To be presented in future Corporate Plans*			

** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

6.8 Program Activity 1.8: Internal Services

Expected Result: Provide the business and administrative support functions and infrastructure to enable the efficient and effective delivery of all program outputs.

Internal Services consists of eight sub-activities that comprise the suite of business support functions, and a ninth sub-activity, AECL's Strategic Initiatives, that comprises the organizational change agenda. Together, these sub-activities enable the efficient conduct of day-to-day business; compliance with applicable policies, regulations and legislation; promotion of a culture of safety and improved performance; and the required interface, as a Crown corporation, with the Government of Canada.

PA 1.8 is comprised of the following sub-activities:

- **Human Resources Management** provides support functions and processes to enable Program Activities to manage their human resources in accordance with collective agreements, policies and legislation. Human Resources also provides supporting programs to promote a safe work environment and healthy workforce.

- **Management and Oversight** provides senior management oversight to ensure program alignment, planning and execution. This includes the functional activities of business planning and maintenance of the AECL Management System and Nuclear Oversight which identifies performance gaps to improve safety and efficiency, including audits of programs and facilities.

- **Communications** provides external and internal communications and information support. It also provides the interface between AECL management, senior elected officials and Government of Canada departments and agencies.

- **Legal** provides legal counsel to all PAs, helps manage associated legal risks and provides intellectual property management support. General Counsel also provides infrastructure and support to comply with legislative requirements under the *Public Servants Disclosure Protection Act* and *Access to Information and Privacy Act*.

- **Financial Management** provides financial operations, accounting and reporting services, and business support and analysis to enable effective financial management of the PAs.

- **Information Technology** maintains the computing infrastructure, provides network applications and desktop support services, and maintains AECL's information assets by improving document management practices, including preparation, archival and integrated repository.

- **Business Development** provides the marketing, sales and contracting services to develop and secure business opportunities for AECL with third-party and Government of Canada customers and partners.

- **Strategic Initiatives** captures the delivery of AECL's improvement agenda initiatives.

- **Supply Chain Management** activities include a fair and equitable purchasing process, ensuring value for money, minimizing risk to AECL, ensuring compliance with federal and provincial laws, and meeting AECL fiduciary guidelines. It also includes warehousing and distribution services that meet American Society of Mechanical Engineers requirements for the handling, storage, preservation, packaging and delivery of materials for nuclear power plants.

PA 1.8 Achievements in 2012-2013

- Successfully delivered the corporate services function following the divestiture of the CANDU Reactor Division and relocation of AECL's headquarters to Chalk River in 2011-2012.

- In conjunction with AECL's union leadership, successfully ratified ten collective agreements.

- AECL achieved ISO 9001 Quality Management System corporate recertification, which supports AECL's development and delivery of products and services for the nuclear industry.

- Made significant progress in improvements to cyber security by updating essential software and tools.

- Five new customers were secured for business development and AECL increased the number of new commercial proposals to prospective and existing customers by over 100 percent from the previous year.

- Improved the tracking and the governance of IP, the encumbrances or limitations on use and the potential for commercialization.

- Improved AECL's ability to plan and oversee supplier contracts by revising contract strategy processes, contract tools and contract governance oversight.

PA 1.8 Objectives for 2013-2016

- Enhance supervisory and management practices, and improve resource utilization and cost management. Improved succession planning and retention for executive, key management and nuclear-critical single incumbent positions will be developed, including workforce planning and talent management.
- Implement AECL's Management System Framework to position AECL for successful restructuring and ensure robust management practices.
- Ensure that all legal and related policy matters, subject to direction from senior management and Board of Directors, are addressed to support Phase 2 restructuring of AECL.
- Enhance engagement with industry to enable business innovation and technology transfer and to secure third-party revenues to reduce Government funding needs.
- Ensure effective information technology support to PAs through the implementation of new or upgraded applications, tools and infrastructure.
- Information Asset Services will develop additional standards, tools and best practices for information management.
- Reassess the accounting and reporting standards appropriate for a Government-funded organization.
- Improve supply chain efficiencies by enhancing its value for internal partners and become a centre of excellence; improve external supplier engagement processes, and deliver cost savings and efficiencies through changes to internal processes and strategic sourcing/negotiations.

PA 1.8 Financial Objectives for 2013-2018

Over the period of the Corporate Plan, the financial objectives for PA 1.8 are:

- Absorb cost escalation and contribute to AECL's goal to abide by the spirit and intent of the Government's Deficit Reduction Action Plan, resulting in cumulative reduction of $6 million (12 percent) over five years through a combination of productivity improvements and alternative service delivery methods.

Table 12: Program Activity 1.8 Financial Projection

$ Millions	Actual	Budget	Plan					5 Year
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	Total
Direct Expenditures	41	58	50	50	50	50	50	248
FTEs*		364	364	364	*To be presented in future Corporate Plans*			

** FTE Accuracy of +/- 5%*

Note: Minor differences are due to rounding.

7 FINANCIAL STATEMENTS

7.1 Financial Overview

The consolidated projections which include both the Nuclear Laboratories and the Wrap-Up Office (2013-2014) are included in Appendix 1. This section focuses on the financial statements for the Nuclear Laboratories. Expenditures will be required in future years for the Wrap-Up Office but cannot be included in this Summary due to commercial sensitivities.

The five-year projections reflected herein are based on delivering the value proposition described previously while ensuring that the AECL sites are operated safely and compliantly and that its capabilities and facilities are maintained to enable readiness for transition.

The 2013-2014 financial projections respect AECL's goal to abide by the spirit and intent of the Government's Deficit Reduction Action Plan, as established last year. Operating funding requirements from the Government for 2013-2014 are 8.3 percent (see Table 14) lower than that provided to AECL by the Government in 2011-2012. This represents a 6.2 percent reduction compared to the budget for 2012-2013.

The plan reflects a cumulative savings in the operating funding requirements from Government over the five-year planning period of $196 million or 22 percent (see Table 14). The reduction is a further $90 million or 12 percent when expressed in 2011-12 constant dollars which reflects the impact of cost escalation being absorbed ($286 million or approximately 34 percent in total) when compared to the funding provided in 2011-2012. AECL will have adjusted the management and funding of its S&T activities from today's situation where the Government is the customer for about 75 percent of its S&T activities across all PAs, to a situation approaching having equal funding by its Government and third-party customers. AECL's focus will be on growing its third-party customer revenues to achieve this shift.

These reductions in Government funding reflect, AECL's continued commitment to improve efficiencies and reduce costs. The decrease also reflects a budget projection that assumes a transition will occur over the next five years whereby AECL will achieve an increase in the amount of third-party revenues to sustain the business while reducing government funding. This shift requires both a growth in third-party activity and an adjustment to the management and funding of S&T activities.

The Corporate Plan assumes that until restructuring has concluded, the capital portfolio will be focused on recapitalization of ageing infrastructure at the Chalk River site that poses the greatest HSSE and operational risks. As a result of prior year investments, experience gained and periodic review of the infrastructure capital portfolio, this plan has realized lower funding requirements from Government early in the plan, specifically over

the next two years, amounting to $33 million compared to the 2012-2013 Corporate Plan submission. The funding profile for the full five years reflects the necessary investment to provide an appropriate recapitalization of infrastructure in line with the direction of restructuring, while helping ensure third-party interest in the Laboratories can be secured.

Legacy and historic waste programs, such as the Nuclear Legacy Liabilities Program, are based on approved plans and related funding. They are excluded from AECL's goal to abide by the spirit and intent of the Deficit Reduction Action Plan through reductions in operating funding. The expectation is for continued or potentially increased annual Government investment in these areas, so as to provide for the effective reduction of these liabilities.

The five-year budget projection in this Corporate Plan has been developed in recognition of the strategic considerations in Section 4 and the direction set out in Sections 5 and 6.

Working capital provides source (use) of funds and represents changes in the balance sheet during the year and the net impact on cash.

Detail on third-party revenues is included in Section 7.4 following the key financial assumptions presented in the next section.

7.2 Key Financial Assumptions

This section outlines the key financial assumptions that have been applied in the development of the financial projections for the 2013 to 2018 Corporate Plan.

Deficit Reduction Action Plan Implications: The plan to achieve a 7.5 percent reduction in operating funds by 2013-2014 as part of AECL's goal to abide by the spirit and intent of the Deficit Reduction Action Plan implemented last year has been achieved. The Corporate Plan further reduces the operating funding requirement over the plan period with a cumulative reduction of 22 percent (approximately 34 percent when expressed in 2011-2012 constant dollars with the impact of cost escalation being absorbed). A key assumption in achieving the Deficit Reduction Action Plan goal is that cost escalation will either be absorbed through productivity improvements for all of the Government funded operating expenditures as provided in Table 14, or passed along to third-party customers.

NRU Operations: For the purposes of this plan, AECL has assumed that it will declare in 2014 its intention to relicense the NRU for an additional five years at the end of its current license period ending October 2016. AECL will discontinue producing Mo-99 at that time in accordance with direction provided by the Government. As such, the Isotope Supply Reliability Program will wind down. A separate program will be established to ensure the maintenance of the NRU licence through the execution of the NRU's Integration Implementation Plan through a second 5-year period. Should a Government

decision in 2014 on the nuclear innovation agenda mandate a shutdown of the NRU in 2016, then future Corporate Plans will reflect this direction.

Heavy Water: The plan assumes that AECL will continue to retain proceeds from heavy water sales to China, and is able to apply these proceeds to contribute to the sustainment of the company.

Elimination of Voluntary Termination Compensation (VTC): Cash management of higher than expected payouts of VTC in 2012-2013 will create higher working capital requirements. The Corporate Plan provides for an amount of $25 million from the Government in 2013-2014 to return working capital requirements to normal levels.

7.3 Financial Summary by Program Activity

Delivery of AECL's value proposition is reflected through its Program Activity Architecture as detailed in Section 6. AECL's strategic outcome is achieved through six output Program Activities and two enabling Program Activities. The Program Activities are aligned with customer needs and AECL S&T priorities. They will be funded through a combination of third-party revenues and government funding. The financial summary by PA is provided in Table 13. It is followed by specific sections providing details on these various revenue/funding streams.

Table 13: Program Activity Financial Summary

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Revenue/Funding								
Government Funding	483	519	576	529	535	539	528	**2,707**
Government "B" Base Funding (GEN IV, CRTI)	1	1	2	2	2	2	2	**10**
Third-Party Revenue	113	122	114	115	130	132	136	**627**
	597	**642**	**692**	**646**	**667**	**673**	**666**	**3,344**
Direct Program Activity Expenditures								
PA 1.1 - Nuclear Industry Capability	34	42	39	41	37	37	38	**192**
PA 1.2 - Nuclear Safety and Security	67	58	58	58	58	58	58	**288**
PA 1.3 - Clean, Safe Energy	19	28	27	28	26	27	27	**135**
PA 1.4 - Health, Isotopes and Radiation	125	127	100	82	72	67	68	**389**
PA 1.5 - Nuclear Environmental Stewardship	141	160	198	205	205	209	209	**1,025**
PA 1.6 - Nuclear Innovation Networks	1	8	12	12	12	12	12	**59**
PA 1.7 - Mission Ready S&T Infrastructure	179	172	199	186	210	212	212	**1,018**
PA 1.8 - Internal Services	41	58	50	50	50	50	50	**248**
	607	**652**	**682**	**661**	**668**	**671**	**672**	**3,355**
Funding Surplus (Deficit)	(10)	(10)	10	(14)	(1)	1	(6)	**(10)**
Working Capital Requirements	10	10	(10)	14	1	(1)	6	**10**
Net Cash Flow	-	-	-	-	-	-	-	-

Note: Minor differences are due to rounding.

In addition to these funding, AECL's output PAs also benefit from in-kind contributions from its many collaborators. The estimated value of these collaborations is expected to

grow to a total of approximately $120 million in 2014-2015, compared to approximately $100 million in 2012-2013.

7.4 Third-Party Revenues

In recognition that AECL's overheads are currently not fully recovered from current third-party customers, the Corporate Plan assumes a transition will occur over the next five years. This transition will see an increase in the amount of third-party cost recovery to contribute to these overheads. There are many activities undertaken at AECL for which Government is the customer. The projection in the 2013 to 2018 Corporate Plan recognizes continued focus on accurately identifying and costing these Government as customer activities and, consistent with Government's expectation, assumes the ratio of revenues from third-parties to Government will increase.

As described earlier, AECL's value proposition includes enabling business innovation and technology transfer to drive economic benefits for Canada. That engagement with industry generates third-party revenues that reduce the level of federal funding otherwise required. Currently, AECL generates third-party revenues primarily through support to Candu Energy Inc., research and development services to COG, isotope production, and the sale or lease of heavy water. As an enabler of business innovation, AECL plans to grow its funding from third-party customers. This growth in third-party funding includes increased third-party revenues, intellectual property licence fees/royalties, and financial contributions towards forward-leaning R&D from strategic customers.

Third-party activities are seen as a growth opportunity for AECL and are expected to reduce the funding required from the Government of Canada.

This includes new technologies offered to industry for commercial exploitation through sales and services.

The Plan assumes the identification of new third-party revenues growing to $30 million annually by the fifth year attributed to new business growth. AECL's main opportunities for new business growth lie in:

(i) the exploitation of AECL science and technology to support sectors outside the power reactor business. This includes:

- technology developed for the power reactor business that can also be exploited in other industries (e.g., cross-over technologies such as inspection tooling);
- technology developed to support AECL's internal needs that can be exploited in other industries (e.g., environmental monitoring and management, safety and security); and,

- new technology being developed to support current AECL R&D priorities (e.g., clean technology).

(ii) leveraging AECL existing assets. AECL plans to increase third-party revenues by attracting private companies to use its licensed sites and nuclear facilities for their commercial operations. Examples of opportunities include establishing private sector companies' interest in NRU for a variety of commercial irradiation services provided by AECL.

The Plan assumes that Mo-99 isotope production will continue through to 2015-2016 and cease for fiscal year 2016-2017, consistent with federal policy direction.

7.5 Government Funding

Operating Funding
Operating funding includes funding referred to as 'base' and the non-capital components of the Isotope Supply Reliability Program (ISRP) and Project New Lease (PNL) programs (recurring activities and operational projects). The requirement for operating funds has been reduced by 8.3 percent in 2013-2014 (Table 14) compared to actual operating funds in 2011-2012. This represents a 6.2 percent reduction compared to the budget for 2012-13. Over the five year planning period, operating funding reflects a cumulative reduction of 22 percent (approximately 34 percent when expressed in 2011-12 constant dollars which reflects the impact of cost escalation being absorbed). These reductions will be realized principally through planned program wind down, productivity improvements and increased third-party revenues where the generation of margins will reduce government funding requirements.

Other Non-recurring Funding
In 2012-2013, AECL successfully implemented the elimination of the Voluntary Termination Compensation (VTC) benefit as part of the renewal of collective agreements, consistent with government direction. The payments made to employees in 2012-2013 seeking early payout of their accumulated entitlement under the terms of the agreement have significantly exceeded the funding originally made available for same. Non-recurring funding in 2013-2014 of $25 million is required to address additional working capital needs arising from the cash management of the funding shortfall in 2012-2013.

Capital Funding
Capital spending during the plan is primarily related to the need to upgrade the ageing infrastructure of AECL. In the later years of the plan, some of the capital expenditures are intended to proceed on a cost sharing basis with third-party customers. At this time the plan has not made any assumptions on the amount of funding that will be available from customers, although it is not expected to be significant related to the projects which have been identified.

AECL's capital program consists of two primary components:

1) Municipal Infrastructure – Investments are required immediately to renew existing and ageing Chalk River Nuclear Laboratories municipal infrastructure systems and facilities such as water, storm sewer, sewage and electrical. These are fundamental to meeting regulatory and HSSE requirements, as well as to maintaining overall CRL operational capability. Given that these requirements originated before the pending AECL restructuring, these capital investments will be funded by AECL via Government funding, and not cost recovered from third parties.

2) Ongoing Recapitalization – Consistent with industry best practices, stable annual recapitalization investments are required moving forward as part of a long term plan to meet anticipated regulatory HSSE requirements, and to maintain overall AECL capability. It is expected that these needs will be cost recovered from all AECL customers.

Legacy and Historical Waste

Legacy and historic waste programs are Natural Resources Canada-funded programs designed to address environmental remediation issues and thereby contribute to the Government of Canada's planned outcome of a clean and healthy environment. AECL executes this work on behalf of Natural Resources Canada through, the Nuclear Legacy Liabilities Program (NLLP), the Port Hope Area Initiative (PHAI), and Low-Level Radioactive Waste Management Office (LLRWMO).

The NLLP is designed to safely and cost effectively reduce legacy liabilities at the Chalk River and Pinawa (Whiteshell) sites and several smaller offsite locations.

NLLP funding is expected to increase in 2013-2014 compared to previous years. This will be the last year of the currently approved three year funded phase. Beyond that year, the projected expenditures are based on a recent update of projected expenditures to reflect a more accelerated approach to decommissioning. Funding for future years will be confirmed through the renewal of NLLP during 2013-14.

Government "B" Base

These projected expenditures provide funding to AECL on project-by-project basis, through purpose-built federal programs that are competitively accessed.

Table 14: Government Funding

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Government Funding								
Operating								
Base Funding - Recurring	151	141	141	139	128	127	116	650
ISRP Operating - Recurring	19	19	15	15	16	8	-	54
IIP Operating - Recurring			-	-	-	8	16	24
PNL Operating - Recurring	35	35	41	40	42	44	44	211
	206	194	197	195	186	186	176	940
ISRP Operating Projects	44	32	24	22	21	11		78
IIP Operating Projects						10	20	30
PNL Operating Projects	6	24	13	7	6	4	4	33
	50	56	37	29	26	25	24	141
Total Operating	255	250	234	224	212	211	199	1,081
Corporate Plan 2012-13	250	250	23[illegible]	229	232	232		
Budget Year - Cumulative Reduction %		2.1%	8.3%	12.2%	17.0%	17.2%	22.0%	
Budget Year - Cumulative Reduction $			21	31	43	44	56	196
2011-12 Constant $ Cumulative Reduction %		2.0%	4.0%	6.0%	8.0%	10.0%	12.0%	
2011-12 Constant $ Cumulative Reduction $		5	9	13	17	21	24	90
Non-Recurring								
One Time Restructuring Costs	7	0	0	0	0	0	0	0
Voluntary Term Compensation	0	6	25	0	0	0	0	25
	7	6	25	0	0	0	0	25
Capital								
ISRP	13	9	3	3	0	0	0	6
PNL	25	61	85	79	100	100	100	464
Total Capital	39	70	88	82	100	100	100	470
Capital Plan 2012-13	75	75	111	93	73	93		
Govt. Funding (Operating + Non-Recurring + Capital)	301	326	347	306	312	311	299	1,576
Legacy Obligations (DIF)	28	18	15	1	1	2	2	22
Legacy and Historic Wastes								
NLLP	137	141	177	180	184	187	191	919
PHAI	14	30	33	36	34	35	31	171
LLRWMO	3	3	4	4	4	4	4	20
	153	174	214	222	222	226	226	1,109
Government Funding	483	519	576	529	535	539	527	2,707
Government "B" Base Funding (GEN IV, CRTI)	1	1	2	2	2	2	2	10

Note: Minor differences are due to rounding.

The budget year cumulative reduction represents the decrease in funding compared to the base year of 2011-12 in accordance with the objective of operating within the spirit and intent of the Deficit Reduction Action Plan.

The constant dollars cumulative reduction reflects the inflationary pressures being absorbed by AECL.

These reductions will be obtained through productivity enhancements and increased revenues from Third Parties.

7.6 2013-14 Operating Budget

The operating budget (Appendix 3) provides details of AECL's forecasted revenues and expenses for the fiscal year ended March 31, 2014, and is submitted for Treasury Board approval in accordance with the Financial Administration Act.

The total funding required for AECL is $671 million which includes the Government funding of $490 million for the Nuclear Laboratories, $67 million for the Wrap-Up Office and third-party funding of $114 million ($91 million of revenue and $23 million funding collection of long-term receivables from sales in prior years).

Government funding of $490 million reflects an increase due to $25 million of funding for VTC repayment and $33 million increase in legacy and historic waste programs. The reduction in expenses to $442 million is primarily due to the $16 million reduction in operating costs.

For the Wrap-Up Office, Government and third-party revenue is $67 million which is required to manage the retained commercial liabilities held by AECL subsequent to the sale of the CANDU Reactor Division.

7.7 2013-14 Capital Budget

The 2013-14 capital budget (as detailed in the Government Funding Schedule in Appendix 3) is submitted for Treasury Board approval in accordance with the Financial Administration Act.

Funding for the capital budget is $88 million, required under two major capital programs; Project New Lease (PNL) and The Isotope Supply Reliability Program (ISRP). PNL, was established to deal with health and safety, regulatory, security, environmental requirements, aging infrastructure and to ensure compliance with its CNSC site licence and other regulatory requirements. ISRP, a second multi-year program was established to ensure that AECL maintains a reliable supply of medical isotopes using the existing isotope production stream.

APPENDIX 1: 2013-2014 CONSOLIDATED FINANCIAL STATEMENTS

Consolidated Funding

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Nuclear Laboratories								
Government Funding	484	520	578	531	537	541	530	2,717
Third-Party Activities	113	122	114	115	130	132	136	627
Total Nuclear Laboratories	597	642	692	646	667	673	666	3,344
Wrap Up Office	212	271	67	-	-	-	-	67
Consolidated Budget	809	913	759	646	667	673	666	3,411

Note: Minor differences are due to rounding.
Note: Expenditures will be required in future years for the Wrap-Up Office but cannot be included in this Plan due to commercial sensitivities.

Consolidated Income Statement

$Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Nuclear Laboratories								
Third-Party Revenue	93	101	91	91	105	105	116	**508**
Cost of Sales	48	58	51	49	45	36	36	**217**
Contribution	**45**	**43**	**41**	**42**	**60**	**69**	**79**	**291**
Funding	438	450	490	449	437	441	430	**2,247**
Period Expenses	375	409	391	375	366	376	374	**1,882**
EBIT	**109**	**83**	**140**	**117**	**131**	**134**	**135**	**656**
Accretion	1,515	149	147	147	147	147	147	**736**
Interest Income	2	2	2	2	2	2	2	**10**
Net Income (Loss) from Continuing Operations	**(1,405)**	**(64)**	**(5)**	**(29)**	**(14)**	**(11)**	**(10)**	**(70)**
Discontinued Operations	180	192	29	-	-	-	-	**29**
Net Income (Loss) after Discontinued Operations	**(1,225)**	**128**	**24**	**(29)**	**(14)**	**(11)**	**(10)**	**(41)**

Discontinued Operations	Actual 2011-12	Budget 2012-13	2013-14	2014-15	2015-16	2016-17	5 Year Total
Funding	212	271	67	-	-	-	**67**
Third-Party Revenue	109	125	-	-	-	-	
Expenses	141	205	38	-	-	-	**38**
EBIT	**180**	**192**	**29**	**-**	**-**	**-**	**29**
Total Discontinued Operations	**180**	**192**	**29**	**-**	**-**	**-**	**29**

Note: Minor differences are due to rounding.
Note: Discontinued operations in 2011-12 reflects the results for the Wrap-Up Office but excludes the commercial operations division which was sold. This results in a difference between the statutory accounts for 2011-12 and the numbers presented above.
Note: Expenditures will be required in future years for the Wrap-Up Office but cannot be included in this Plan due to commercial sensitivities.

Consolidated Balance Sheet

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18
Assets							
Cash	35	55	19	19	19	19	19
Accounts Receivable	338	100	120	120	120	120	120
Long Term Receivables	149	147	125	101	75	49	28
NWMO Trust Fund	39	44	47	51	54	58	62
Heavy Water Inventory	291	291	288	286	284	282	279
Inventory	29	57	57	57	57	57	57
Prepaid Expenses	0	11	11	11	11	11	11
Fixed Assets (Net)	265	300	360	420	480	540	600
Total Assets	**1,147**	**1,004**	**1,027**	**1,064**	**1,100**	**1,135**	**1,176**
Liabilities							
AP & Accrued Liabilities	134	58	58	58	58	58	58
Deferred Waste Funding	147	172	202	232	262	292	322
Employee Future Benefits	90	92	58	35	35	35	35
Customer Advances / Provisions	438	35	35	35	35	35	35
Deferred Capital Funding	192	256	338	410	497	582	670
Decommissioning & Site Remediation	5,679	5,772	5,717	5,720	5,676	5,633	5,592
Total Liabilities	**6,681**	**6,384**	**6,408**	**6,490**	**6,563**	**6,635**	**6,712**
Equity							
Capital Stock	15	15	15	15	15	15	15
Contributed Capital	292	326	301	276	251	226	201
Deficit	(5,841)	(5,722)	(5,697)	(5,717)	(5,730)	(5,741)	(5,752)
Total Equity	**(5,534)**	**(5,380)**	**(5,381)**	**(5,426)**	**(5,463)**	**(5,499)**	**(5,536)**
Total Equity and Liabilities	**1,147**	**1,004**	**1,027**	**1,064**	**1,100**	**1,135**	**1,176**

Note: Minor differences are due to rounding.

AECL will, consistent with past practice, continue to utilize heavy water proceeds received throughout the plan period to fund operations and to report the proceeds as deferred decommissioning funding.

The decision to eliminate the Voluntary Term Compensation (VTC) liability has resulted in a reduction in the employee future benefits liability in 2013-2014.

The Waste Management and Decommissioning and Site Remediation provision represents the future obligation to address waste management and decommissioning liabilities. The liability is expressed in terms of the present value of future expenditures required to discharge the obligation. AECL's decommissioning and waste management provision is adjusted annually to reflect progress to date, new estimates as they become available and new waste liabilities arising from ongoing operations. These new liabilities are not currently funded. As such, it is assumed that these new waste liabilities will be funded in the future period in which the work is undertaken to disposition those liabilities. The year-over-year growth in this account represents the incremental costs to discharge the liability in the future. The adoption of International Financial Reporting Standards (IFRS) requires that the liability be reviewed quarterly using the spot interest rate in

effect at the quarter end. This can result in significant increases in the value of the liability but does not represent a current cash flow requirement from government. The above projections do not include the potential future impact that interest rate changes will have on the reported liability.

Deferred revenue is the unearned interest portion of the long-term receivable pertaining to the heavy water sales. Deferred capital funding is the amount of past federal funding for capital items that have yet to be amortized.

Consolidated Cash Flow

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
Nuclear Laboratories								
Net Cash Flow Before Revenue & Funding	(597)	(642)	(692)	(646)	(667)	(673)	(666)	**(3,344)**
Third-Party Revenue	113	122	114	115	130	132	136	**627**
Government Funding	484	520	578	531	537	541	530	**2,717**
	-	-	-	-	-	-	-	-
Discontinued Operations - Wrap Up Office								
Net Cash Flow Before Funding	(234)	(271)	(38)	-	-	-	-	**(38)**
Government Funding	212	271	67	-	-	-	-	**67**
	(22)	-	**29**	-	-	-	-	**29**
Net Cash Flow	**(22)**	-	**29**	-	-	-	-	**29**

NOTE: Numbers in table above are presented on a cash flow basis.

Note: Minor differences are due to rounding.

Positive cash flows for the Discontinued Operations – Wrap-Up Office are required to meet their obligations under Accounts Payable and Accrued Liabilities in the consolidated Balance Sheet.

APPENDIX 2: NUCLEAR LEGACY LIABILITY PROGRAM (NLLP)

$ Millions	Actual 2011-12	Budget 2012-13	Plan 2013-14	2014-15	2015-16	2016-17	2017-18	5 Year Total
NLLP Funding	137	141	177	180	184	187	191	919
Expenditures								
Chalk River Labs	85	91	126	126	152	108	100	612
Whiteshell	46	48	48	48	48	48	48	240
Offsite Locations	5	8	8	9	9	9	9	43
Risk Management	-	(6)	(5)	(2)	(25)	22	34	24
Decommissioning Overhead Recovery	(19)	(25)	(23)	(24)	(25)	(26)	(27)	(125)
	(19)	(31)	(28)	(26)	(50)	(4)	7	(101)
Direct NLLP Costs	118	117	154	156	159	161	164	794

Note: Minor differences are due to rounding.

The NLLP Program is a significant component of PA 1.5 Nuclear Environmental Stewardship. The plan reflects an achievable increase in activity over the next five years. The decommissioning profile will be updated next year as an updated plan is developed with the objective of accelerating the decommissioning process where it can be achieved in a cost effective manner.

APPENDIX 3: 2013-2014 OPERATING BUDGET

Revenue and Net Income

$ Millions	Actual 2011-12	Budget 2012-13	2013-14
Nuclear Laboratories			
Third-Party Revenue	93	101	91
Funding	438	450	490
Expenses	423	468	442
	109	**83**	**140**
Accretion	1,515	149	147
Net Income after Accretion	**(1,407)**	**(66)**	**(7)**
Interest Income	2	2	2
Net Income	**(1,405)**	**(64)**	**(5)**
Discontinued Operations - Wrap Up Office			
Funding / Third-Party Revenue	321	397	67
Expenses	141	205	38
Net Income	**180**	**192**	**29**
Total Net Income	**(1,225)**	**128**	**24**

Note: Minor differences are due to rounding.
Third-party revenue above excludes $23 million of accounts receivables to be received in 2013-14. Table 13 reflects consolidated funding from third-parties.

AECL has considerable operating costs associated with deteriorating facilities and increasing regulatory health and safety requirements. Based upon projected funding, AECL Nuclear Laboratories is projecting an operating loss of $5 million in 2013-2014.

The above projections do not include any adjustment for revaluation of the liability using the spot interest rate at year-end required under IFRS.

Government Funding

$ Millions	Actual 2011-12	Budget 2012-13	2013-14
Nuclear Laboratories			
Operating			
Base Funding - Recurring	151	141	141
ISRP Operating - Recurring	19	19	15
PNL Operating - Recurring	35	35	41
ISRP Operating Projects	44	32	24
PNL Operating Projects	6	24	13
Total Operating	**255**	**250**	**234**
Non-Recurring	7	6	25
Capital			
ISRP	13	9	3
PNL	25	61	85
	39	**70**	**88**
Legacy Obligations (DIF)	28	18	15
Legacy and Historic Wastes			
NLLP	137	141	177
PHAI	14	30	33
LLRWMO	3	3	4
	153	**174**	**214**
Total Government Funding	**483**	**519**	**576**
Government "B" Base Funding (GEN IV, CRTI)	**1**	**1**	**2**
Discontinued Operations - Wrap Up Office	**212**	**271**	**67**
Total Funding	**696**	**791**	**645**

Note: Minor differences are due to rounding.

AECL's Nuclear Laboratories reflects $578 million in funding for 2013-2014 (including Government "B" Base Funding). This includes $214 million for Legacy and Historic Wastes funding, $88 million for capital funding and $25 million of Non-Recurring Funding to fund the higher than anticipated reduction in the Voluntary Term Compensation (VTC) liability. The Wrap-Up Office has projected funding of $67 million.

Cash Flow

$ Millions	Actual 2011-12	Budget 2012-13	2013-14
Nuclear Laboratories			
Net Cash Flow Before Revenue & Funding	(597)	(642)	(692)
Third-Party Revenue	113	122	114
Government "B"Base Funding (GEN IV, CRTI)	1	1	2
Government Funding	483	519	576
	-	-	-
Discontinued Operations - Wrap Up Office			
Net Cash Flow Before Funding	(234)	(271)	(38)
Government Funding	212	271	67
	(22)	-	**29**
Net Cash Flow	**(22)**	-	**29**

Note: Minor differences are due to rounding.

The 2013-2014 Net Cash Flow before Revenue & Funding is approximately $50 million lower than 2012-2013. The $25 million of additional working capital required to manage the VTC payments in 2012-2013, the $33 million in increased expenditures to deliver the Legacy program and the $18 million increase in capital expenditures to further projects already in implementation are the main contributors to the year over year variance. Funding required for operating costs have been reduced by $16 million from the 2012-2013 budget level.

Balance Sheet

$ Millions	Actual 2011-12	Budget 2012-13	2013-14
Assets			
Cash	35	55	19
Accounts Receivable	338	100	120
Long Term Receivables	149	147	125
NWMO Trust Fund	39	44	47
Heavy Water Inventory	291	291	288
Inventory	29	57	57
Prepaid Expenses	-	11	11
Fixed Assets (Net)	265	300	360
Total Assets	**1,147**	**1,004**	**1,027**
Liabilities			
AP & Accrued Liabilities	134	58	58
Deferred Waste Funding	147	172	202
Employee Future Benefits	90	92	58
Customer Advances / Provisions	438	35	35
Deferred Capital Funding	192	256	338
Decommissioning & Site Remediation	5,679	5,772	5,717
Total Liabilities	**6,681**	**6,384**	**6,408**
Equity			
Capital Stock	15	15	15
Contributed Capital	292	326	301
Deficit	(5,841)	(5,722)	(5,697)
Total Equity	**(5,534)**	**(5,380)**	**(5,381)**
Total Equity and Liabilities	**1,147**	**1,004**	**1,027**

Note: Minor differences are due to rounding.

The long-term receivables and the deferred revenue represent the long-term heavy water lease and the associated interest income, which are reduced as payments are made.

APPENDIX 4: WRAP-UP OFFICE

On October 2, 2011, AECL and the Government of Canada completed the sale of AECL's CANDU Reactor Division to Candu Energy Inc., a subsidiary of SNC-Lavalin. As a condition of the sale, AECL remains responsible for all pre-closing liabilities related to the CANDU Reactor Division business.

Due to the nature of the transaction, the WUO was established in October 2011 to segregate these liabilities and obligations from AECL's remaining entity, Nuclear Laboratories, and to manage them.

Management activities include the administering of and funding for the existing life extension projects (LEPs) including: warranty, management of outstanding claims and litigation, completion of the right-sizing of the corporation resulting from the transaction, and management of the financial support for reactor technology (EC6) development.

Given the nature of the work remaining, the WUO requires certain skills and abilities to discharge all of the remaining obligations and responsibilities of the former CANDU Reactor Division arising from the transaction. The WUO's focus is primarily on the management of the subcontracts with Candu Energy Inc., to complete the existing life extension projects, and the commercial and legal work required to settle outstanding and new claims relating to CANDU Reactor Division's work pre-closing. This effort is supported by general office staff, engineers, accountants, lawyers, managers and other specialized staff. A small complement of AECL employees has been retained for these purposes.

The activities of the WUO are expected to be largely completed by 2015-2016 following close-out of LEP warranties and claims in respect of the former Candu Reactor Division. A strategy will be developed to deal with any residual or unresolved claims, litigation or warranty obligations beyond the projected close of the WUO. Natural Resources Canada will propose options for consideration in anticipation of the WUO closure.

APPENDIX 5: AECL BOARD OF DIRECTORS

Section 3.4.1 of the Corporate Plan provides further information on AECL's Board including details on appointments and term lengths[5].

Peter Currie
Appointed Chair of the Board, October 2011
Reappointed October 2012 – ending October 2013
AECL, Chalk River, Ontario

Current directorships include: VIXS Systems Inc; Kemptville District Hospital and Intelius Inc. Former Executive Vice-President and Chief Financial Officer of Nortel Networks Corporation; Vice-Chairman and Chief Financial Officer for the Royal Bank of Canada; and Executive Vice-President and Chief Financial Officer at North American Life Assurance Company. Former member of the Board of Governors and Executive Committee of York University and of the Board of York University Development Corp. Former Board Chair of Symcor Inc. and Director of Toronto East General Hospital, C.D. Howe Institute, Arise Technologies Corp. and Canadian Tire Corporation Limited. Named Canada's CFO of the Year in 2003 by PricewaterhouseCoopers, Financial Executives International Canada and The Caldwell Partners International. Holds a bachelor Degree of Economics and an MBA from York University. Appointed to AECL Board in October 2008.

Committees: Chair, Audit (April-October 2011); Member, Audit (ex-officio, October 2011-current), Special Advisory (April-October 2011), and Human Resources & Governance (ex-officio, October 2011-current).

Dr. Robert Walker
Appointed President & Chief Executive Officer, October 2011
Reappointed October 2012 – ending October 2014
AECL, Chalk River, Ontario

Current Chair of the Board of the MEOPAR Network of Centres of Excellence. Former Senior Vice-President, Nuclear Laboratories, AECL; Assistant Deputy Minister of Science and Technology, Department of National Defence; and Chief Executive Officer of Defence Research and Development Canada. Former Chair of the NATO Research and Technology Board. Holds a physics degree from Acadia University, and a Master of Engineering (engineering physics) and a PhD (electrical engineering) from McMaster University. A graduate of the National Defence College and a Fellow of the Canadian Academy of Engineering. Joined AECL in November 2010.

Committees: Member, Audit (ex-officio, October 2011-current), and Human Resources & Governance (ex-officio, October 2011-current).

---

[5] Section 3.4.1: AECL's Directors, the Board Chair and the President and Chief Executive Officer are appointed by the Government of Canada by Order-in-Council. Directors are normally appointed for a term of three years and are eligible for re-appointment on the expiration of their term. Incumbent directors continue in office until their successors are appointed.

Barbara Trenholm
Professor Emerita, Faculty of Business Administration
University of New Brunswick

Current directorships include: Plazacorp Retail Properties Ltd. Member of the Institute of Corporate Directors. Former co-chair of the University of New Brunswick Pension Board of Trustees, Past-President of the New Brunswick Institute of Chartered Accountants, and former Acting Dean of the University of New Brunswick's Faculty of Business Administration. Former member of the Canadian Institute of Chartered Accountant's Board of Directors. Awards include: a Fellow Chartered Accountant designation, the National Post/ PricewaterhouseCoopers Leaders in Management Education Award, the Global Teaching Excellence Award, and University of New Brunswick Merit Award and Dr. Allan P. Stuart Award for Excellence in Teaching. Holds a bachelor of commerce from Mount Allison University, and an MBA from the University of Maine. Appointed to AECL Board in June 2002. Reappointed in 2005.

Committees: Chair, Audit (October 2011-current); Member, Audit (April-October 2011), and Project Risk Review (April-October 2011).

Dr. Claude Lajeunesse
President Emeritus, Ryerson University, Toronto, Ontario

Current Board Chair of the Green Aviation Research & Development Network and Board member of the Canada Science and Technology Museums Corporation Foundation. Former President and CEO of the Aerospace Industries Association of Canada and the Association of Universities and Colleges of Canada. Former President and Vice-Chancellor of Concordia University in Montreal and Ryerson University in Toronto. Former Board member of TD Insurance, SOFINOV (Caisse de dépôt et placement du Québec) and of the Toronto East General Hospital. Holds a PhD in nuclear engineering from Rensselaer Polytechnic Institute in New York. Appointed to AECL Board in March 2005. Reappointed in 2008.

Committees: Chair, Human Resources & Governance (October 2011-current), and Science, Technology & Nuclear Oversight (April-October 2011); Member, Project Risk Review (April-October 2011), and Special Advisory (April-October 2011).

Dr. John Luxat
Professor and NSERC/UNENE Industrial Research Chair in Nuclear Safety Analysis
McMaster University

Member of the Canadian and American Nuclear Societies and of the Advisory Board of the International Association for Structural Mechanics in Reactor Technology. Former Vice-President and Board Director of Nuclear Safety Solutions Limited with 32 years of experience in the Canadian nuclear industry. Past-President and Treasurer of the Canadian Nuclear Society. Principal Investigator, Nuclear Ontario research network. Served as member of Alberta's Nuclear Power Expert Panel. Holds a Bachelor of Science and a Master of Science in electrical engineering from the University of

Cape Town, South Africa, and a PhD in electrical engineering from the University of Windsor. Appointed to AECL Board in October 2008.

Committees: Member, Science, Technology & Nuclear Oversight (April-October 2011), and Human Resources & Governance (October 2011- current).

Gregory Josey[6]

Gregory Josey has some 30 years of executive leadership and financial expertise. He is currently the President of FORTEN Performance Consulting Inc., a firm that provides strategic financial project support. His extensive executive career in the health care field includes experience as Vice-President of Finance for Johnson & Johnson Inc. and McNeil Consumer Health Care. In particular, he played a lead role in the acquisition and integration of Pfizer Consumer Healthcare into the Canadian Johnson & Johnson consumer business.

Mr. Josey has extensive experience working on boards, having served as a member and chair for several organizations, including the Johnson & Johnson North American CFO Council.

Mr. Josey obtained his B.B.A. from Wilfrid Laurier University and is a Certified Management Accountant.

Appointed to AECL Board on March 13, 2013 (until December 31, 2014).

Serge Dupont[7]

Serge Dupont is the Deputy Minister of Natural Resources Canada. He was also the Deputy Minister of Intergovernmental Affairs (Privy Council Office) in 2009 and Special Advisor to the Minister of Natural Resources on Nuclear Energy Policy.

From 2001 to 2008, Mr. Dupont occupied senior positions in Finance Canada, including Assistant Deputy Minister, Financial Sector Policy, and Director General (Analysis), Tax Policy.

Since he joined the public service of Canada in 1983, Mr. Dupont has worked on a wide range of issues, including energy policy, the privatization of federal Crown corporations, Canada's participation in the G7, corporate governance, intellectual property policy, taxation, the financial sector and intergovernmental affairs. He served as Finance Counsellor in Canada's mission in Paris, Departmental Assistant to the Minister of Finance, and Corporate Secretary for Industry Canada.

[6] Sourced from: http://www.nrcan.gc.ca/media-room/news-releases/2013/6955
[7] Sourced from: http://www.nrcan.gc.ca/media-room/news-releases/2013/6953

Mr. Dupont holds a B.Sc. from the University of Ottawa and an M.A.Sc. in Management Sciences from the University of Waterloo. In addition, he has an international diploma in public administration from the École nationale d'administration in Paris.

Appointed to AECL Board on March 13, 2013 (until December 31, 2014).

APPENDIX 6: ACRONYMS

Abbreviation	Description
AP	Accounts Payable
AECL	Atomic Energy of Canada Limited
CANDU	Canada Deuterium Uranium
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CNBC	Canadian Neutron Beam Centre
CNSC	Canadian Nuclear Safety Commission
COE	Centre of Excellence
COG	CANDU Owners Group
CRL	Chalk River Laboratories
CRTI	CBRNE Research and Technology Initiative
DIF	Dedicated Isotope Facilities
EAMS	Enterprise Asset Management System
EBIT	Earnings Before Interest and Taxes
EC6	Enhanced CANDU 6
FAA	Financial Administration Act
FTE	Full-Time Equivalent
Gen IV	Generation IV
GIF	Generation IV International Forum
GM	General Manager
GOCO	Government-Owned Contractor-Operated
HEU	Highly-Enriched Uranium
HSSE	Health, Safety, Security and the Environment
IAEA	International Atomic Energy Agency
IFRS	International Financial Reporting Standards
IIP	Integrated Implementation Plan
INSS	Institute of Nuclear Safety System
IP	Intellectual Property
ISO	International Standards Organization
IT	Information Technology
ISRP	Isotope Supply Reliability Program
LLRWMO	Low-Level Radioactive Waste Management Office
LEP	Life Extension Projects
MB	Province of Manitoba
Mo-99	Molybdenum-99
MO	Management Office

Abbreviation	Description
NLLP	Nuclear Legacy Liabilities Program
NPIC	Nuclear Power Institute of China
NRC	National Research Council
NRCan	Natural Resources Canada
NRU	National Research Universal
NRX	National Research Experimental
NWMO	Nuclear Waste Management Organization
OCI	Organization of CANDU Industries
ON	Province of Ontario
PA	Program Activity
PAA	Program Activity Architecture
PHAI	Port Hope Area Initiative
PLR	Point Lepreau Refurbishment
PNL	Project New Lease
R&D	Research and Development
S&T	Science and Technology
SLOWPOKE	Safe Low Power Critical Experiment
SCWR	Super-Critical Water Cooled Reactor
SMAGS	Shielded Modular Above Ground Storage
SMR	Small-Medium Nuclear Reactor
SPORA	Strategic Planning and Operations Research Analysis
TSSA	Technical Standards and Safety Analysis
URL	Underground Research Laboratory
US	United States of America
VTC	Voluntary Termination Compensation
WANO	World Association of Nuclear Operators
WL	Whiteshell Laboratories
WUO	Wrap-Up Office
ZED-2	Zero Energy Deuterium